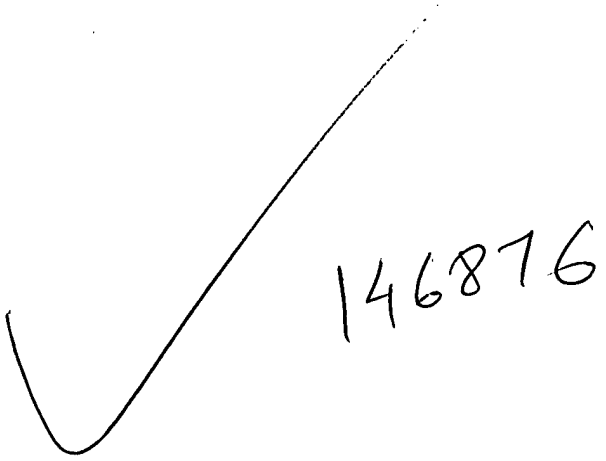
STIC Search Report
EIC 1700

STIC Database Tracking Number: 146876

TO:	From:
Sin J Lee Location: REM 9D60 Art Unit : 1752 March 15, 2005 Case Serial Number: 09/992560/C	Kathleen Fuller Location: EIC 1700 REMSEN 4B28 Phone: 571/272-2505 Kathleen.Fuller@uspto.gov

Search Notes



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact***:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 1713*
- *Relevant prior art **found**, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art **not found**:*
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

Access DB# 146576

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 2-24-05
Art Unit: 1752 Phone Number 30 2-1333 Serial Number: 09/992,560
Mail Box and Bldg/Room Location: 9D69 (Rem) Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: B.G attached

Inventors (please provide full names):

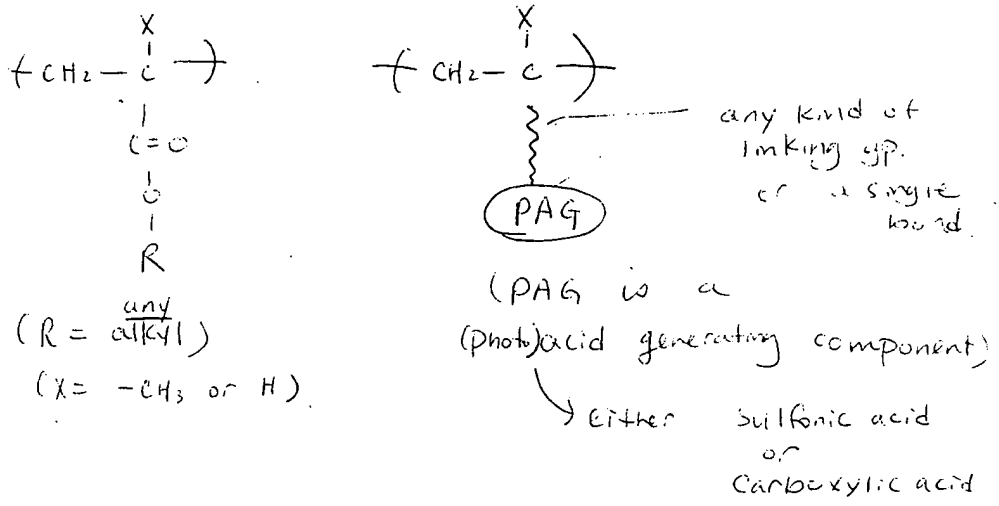
Earliest Priority Filing Date:

Pat. & T.M. Office

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

C

Please search for the following polymer;



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STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher: E. Fuller	NA Sequence (#)	STN ✓
Searcher Phone #:	AA Sequence (#)	Dialog
Searcher Location:	Structure (#) 4	Questel/Orbit
Date Searcher Picked Up:	Bibliographic	Dr.Link
Date Completed: 3/15/05	Litigation	Lexis/Nexis
Searcher Prep & Review Time: 20	Fulltext	Sequence Systems
Clerical Prep Time:	Patent Family	WWW/Internet
Online Time: 20	Other	Other (specify)

=> FILE REG
FILE 'REGISTRY' ENTERED AT 11:07:15 ON 15 MAR 2005

Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 14 MAR 2005 HIGHEST RN 845540-96-7
DICTIONARY FILE UPDATES: 14 MAR 2005 HIGHEST RN 845540-96-7

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 18, 2005

Please note that search-term pricing does apply when conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

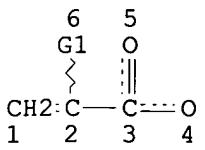
Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html

=> FILE HCAPL
FILE 'HCAPLUS' ENTERED AT 11:07:21 ON 15 MAR 2005

FILE COVERS 1907 - 15 Mar 2005 VOL 142 ISS 12
FILE LAST UPDATED: 14 Mar 2005 (20050314/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> D QUE
L1 STR

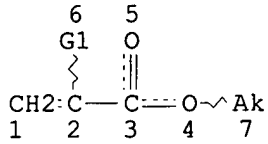


VAR G1=H/CH3/CL
NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 6

STEREO ATTRIBUTES: NONE
L3 SCR 2043
L5 279001 SEA FILE=REGISTRY SSS FUL L1 AND L3
L32 STR 1



VAR G1=H/CH3
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
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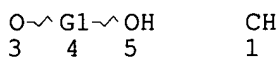
NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE
L48 STR 2



VAR G1=S/C
NODE ATTRIBUTES:
CONNECT IS M2 RC AT 2
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

5,392 polymers from structures 1 and 2, limited to 2 components

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE
L51 91041 SEA FILE=REGISTRY SUB=L5 SSS FUL L32 AND L48
L52 5392 SEA FILE=REGISTRY ABB=ON L51 AND 2/NC
L53 15807 SEA FILE=HCAPLUS ABB=ON L52
L54 1565 SEA FILE=HCAPLUS ABB=ON L53(L)?RESIST?
L55 536 SEA FILE=HCAPLUS ABB=ON L54 AND REPROG?/SC
L56 6 SEA FILE=HCAPLUS ABB=ON L55 AND NANO?
L57 190 SEA FILE=HCAPLUS ABB=ON L55 AND LITHOG?
L58 46 SEA FILE=HCAPLUS ABB=ON L57 AND (RESOLU? OR RESOLV?)
L59 51 SEA FILE=HCAPLUS ABB=ON L58 OR L56

=> D L59 BIB ABS IND HITSTR 1-51

L59 ANSWER 1 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:799453 HCAPLUS

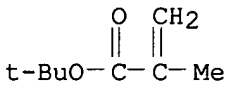
DN 138:409230
TI Dissolution characteristics of resist polymers studied by quartz crystal microbalance transmission-line analysis and pKa acidity analysis
AU Toriumi, Minoru; Itani, Toshiro; Yamashita, Jun; Sekine, Tomomi; Nakatani, Kiyoharu
CS Adv. Technol. Res. Dep., Semiconductor Leading Edge Technologies, Inc., Yokahama Kanagawa, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (2002), 4690(Pt. 2, Advances in Resist Technology and Processing XIX), 904-911
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
AB The development process is very important in determining the resist **resolution** of **lithog**. Polymer dissoln. during development was studied based on resonance frequency and impedance measured by the quartz crystal microbalance (QCM) method. A transmission-line anal. of QCM data was then carried out. The dissoln. characteristics were also evaluated from the standpoint of mol. structures and polymer acidity measured by potentiometric titration Fluoropolymers showed dissoln. characteristics which reflect large fluorine effects in addition to acidity effects. The fluorine effects retarded the dissoln. rates and formed a swelling layer. Poly(methacrylate)s had a complicated swelling behavior during development owing to the hydrophobic components in the polymers. The fluorine and hydrophobic effects rather than polymer acidity play the dominant role in forming the swelling layer during development.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST dissoln characteristic resist polymer quartz crystal microbalance; transmission line acidity analysis dissoln characteristic photoresist polymer
IT Acidity
Dissolution
Microbalances
Photoresists
(dissoln. characteristics of photoresist polymers studied by quartz crystal microbalance transmission-line anal. and pKa acidity anal.)
IT Fluoropolymers, properties
RL: PRP (Properties)
(dissoln. characteristics of photoresist polymers studied by quartz crystal microbalance transmission-line anal. and pKa acidity anal.)
IT Functional groups
(hydroxylhexafluoroisopropyl; dissoln. characteristics of photoresist polymers studied by quartz crystal microbalance transmission-line anal. and pKa acidity anal.)
IT 75-59-2, Tetramethylammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(developer; dissoln. characteristics of photoresist polymers studied by quartz crystal microbalance transmission-line anal. and pKa acidity anal.)
IT 24979-70-2, Poly(p-hydroxystyrene) **35343-63-6**, Methacrylic acid-tert-butyl methacrylate copolymer
RL: PRP (Properties)
(dissoln. characteristics of **photoresist** polymers studied by quartz crystal microbalance transmission-line anal. and pKa acidity anal.)
IT **35343-63-6**, Methacrylic acid-tert-butyl methacrylate copolymer
RL: PRP (Properties)

(dissoln. characteristics of **photoresist** polymers studied by quartz crystal microbalance transmission-line anal. and pKa acidity anal.)

RN 35343-63-6 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

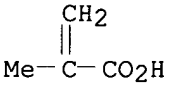
CM 1

CRN 585-07-9
CMF C8 H14 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 2 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:647876 HCAPLUS
DN 137:330980
TI Electron beam **lithography** of microbowtie structures for next-generation optical probe
AU Tseng, Ampere A.; Chen, Chii D.; Wu, C. S.; Diaz, Rodolfo E.; Watts, Michael E.
CS Department of Mechanical & Aerospace Engineering, Arizona State University, Tempe, AZ, 85287-6106, USA
SO Journal of Microlithography, Microfabrication, and Microsystems (2002), 1(2), 123-135
CODEN: JMMMGF; ISSN: 1537-1646
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
AB The development of microbowtie structures for a next-generation optical probe called the Wave Interrogated Near-Field Array (WINFA) is presented. The WINFA combines the sensitivity of near-field detection with the speed of optical scanning. The microbowties are designed to act as resonant elements to provide spatial **resolution** well below the diffraction limit with a transmission efficiency approaching unity. Following an introduction of the concept and background information, the design of the microbowtie is presented. A numerical electromagnetic scattering model is developed and used for better designs of the bow-tie structures. The electron-beam **lithog**. process is then used to fabricate the final designed bowties structure. Special fabrication procedures have

been developed to cope with the charge dissipation problem that arises when **lithographing** an insulating substrate as is required in the present probe design. Two types of substrates and two types of resists are considered in the present study. The fabricated microstructures have 40 nm bow-tie gaps that are more than 200 000 times smaller than the one built previously. All fabricated bow-tie microstructures are examined and the results are compared. It has been found that, in addition to the relative ease in fabrication, the bowties on indium-tin-oxide coated glass substrate can not only minimize the charge accumulation in a glass substrate, but also satisfy the functional requirement of optical transparency to the incident wave. Recommendations for making a bow-tie structure in the even smaller bow-tie array are also included.

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 73, 76

ST electron beam **lithog** microbowtie structure next generation optical probe

IT Optical glass
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(crown, substrate; direct-write electron-beam **lithog**. fabrication of transparent microbowtie structures for next-generation optical probe using Ito-cotad glass and resist layer or trilayer resist on glass)

IT Semiconductor devices
(direct-write electron-beam **lithog**. fabrication of microbowtie structures for next-generation optical probe for imaging inspection of wafers)

IT Electron beam **lithography**
Microstructure
(direct-write electron-beam **lithog**. fabrication of transparent microbowtie structures for next-generation optical probe)

IT Surface defects
(direct-write electron-beam **lithog**. fabrication of transparent microbowtie structures for next-generation optical probe for inspection of material surfaces)

IT Testing of materials
(nondestructive; direct-write electron-beam **lithog**. fabrication of microbowtie structures for next-generation optical probe for imaging inspection)

IT Optical glass
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(substrate; direct-write electron-beam **lithog**. fabrication of transparent microbowtie structures for next-generation optical probe using Ito-cotad glass and resist layer or trilayer resist on glass)

IT 50926-11-9, Indium tin oxide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(direct-write electron-beam **lithog**. fabrication of transparent microbowtie structures for next-generation optical probe)

IT 9011-14-7, PMMA
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(direct-write electron-beam **lithog**. fabrication of transparent microbowtie structures for next-generation optical probe for inspection of material surfaces)

IT 7440-21-3, Silicon, processes

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(substrate; direct-write electron-beam **lithog.** fabrication of transparent microbowtie structures for next-generation optical probe using Ito-cotad glass and resist layer or trilayer resist on glass)

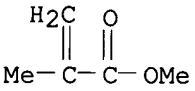
IT 7440-56-4, Germanium, processes **25086-15-1**, Poly(methacrylic acid-methyl methacrylate)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(trilayer **resist** structure; direct-write electron-beam **lithog.** fabrication of transparent microbowtie structures for next-generation optical probe using trilayer **resist** on glass)

IT **25086-15-1**, Poly(methacrylic acid-methyl methacrylate)
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(trilayer **resist** structure; direct-write electron-beam **lithog.** fabrication of transparent microbowtie structures for next-generation optical probe using trilayer **resist** on glass)

RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

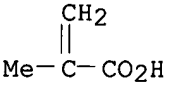
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



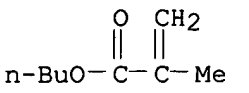
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 3 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:402263 HCAPLUS
DN 137:70444
TI Testing of the photopolymerizable photoresists
AU Treushnikov, Valeri M.; Victorova, Elena A.
CS Reper NN, Ltd., Nizhnii Novgorod, 603022, Russia
SO Internet Photochemistry & Photobiology [online computer file] (2000), 3rd, No pp. given

CODEN: IPPHFO; ISSN: 1470-1782
URL: http://www.photobiology.com/photobiology2000/treush/index.htm
PB Internet Photochemistry and Photobiology
DT Journal; (online computer file)
LA English
AB Three aspect of the photopolymerizable photoresist testing were studied. They are: (1) the correct determination of light sensitivity and **resolution** of the photoresist layers; (2) the problem of possible estimation of the internal parameters of the systems on the basis of determination their characteristic and sensitometric curves; (3) finding of the relationship between the light sensitivity and **resolution** of the layers and their composition and structural dynamical properties. Main requirements that must be imposed on the photoresist composition giving an opportunity to obtain maximal **resolution** are formulated.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST photopolymerizable **lithog** photoresist sensitometric characteristics testing
IT Polymerization
Polymerization catalysts
(photopolymn.; photosensitivity of photopolymerizable photoresist layers in relation to layer composition and structural-dynamic properties of these layers)
IT Photolysis
Photoresists
Simulation and Modeling, physicochemical
(photosensitivity of photopolymerizable photoresist layers in relation to layer composition and structural-dynamic properties of these layers)
IT 583-63-1, o-Quinone
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(inhibitor; photosensitivity of photopolymerizable photoresist layers in relation to layer composition and structural-dynamic properties of these layers)
IT 22499-12-3, Isobutyl benzoin ether 24650-42-8, 2,2-Dimethoxyphenylacetophenone
RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(initiator; photosensitivity of photopolymerizable photoresist layers in relation to layer composition and structural-dynamic properties of these layers)
IT 109-16-0, TGM-3 **26284-14-0**, Butyl methacrylate-methacrylic acid copolymer
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(photosensitivity of photopolymerizable **photoresist** layers in relation to layer composition and structural-dynamic properties of these layers)
IT **26284-14-0**, Butyl methacrylate-methacrylic acid copolymer
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(photosensitivity of photopolymerizable **photoresist** layers in relation to layer composition and structural-dynamic properties of these layers)
RN 26284-14-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with butyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

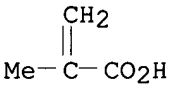
CM 1

CRN 97-88-1
CMF C8 H14 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



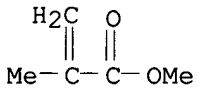
RE.CNT 57 THERE ARE 57 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 4 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:330778 HCAPLUS
DN 137:39240
TI Studying on electron beam lithography technology
AU Liu, Yugui; Wang, Weijun; Luo, Siwei; Jiang, Zeliu; Pu, Jiliang
CS Hebei Semiconductor Research Institute, Shijiazhuang, 050002, Peop. Rep. China
SO Proceedings - International Conference on Solid-State and Integrated Circuit Technology, 6th, Shanghai, China, Oct. 22-25, 2001 (2001), Volume 1, 472-474. Editor(s): Li, Bing-Zong. Publisher: Institute of Electrical and Electronics Engineers, New York, N. Y.
CODEN: 69CNW6; ISBN: 0-7803-6520-8
DT Conference
LA English
AB The authors developed a method to obtain T-gate submicron structures using Leica VB-5HR electron-beam lithog. system, tri-layer resists, and several levels of exposure dose assignments, and applied this method to fabricate GaAs microwave and millimeter wave devices and integrated circuits. Also, the authors fabricated fine lines of submicron to **nano**-level, and obtained the golden lifted-off features of 17 nm.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 73, 76
ST submicron structure fabrication electron beam lithog; gallium arsenide microwave millimeter wave device electron beam lithog
IT Electron beam lithography
Microwave devices
(fabrication of T-gate submicron structures using Leica VB-5HR electron-beam lithog. system with tri-layer resist)
IT Integrated circuits
(fabrication of T-gate submicron structures using Leica VB-5HR electron-beam lithog. system with tri-layer resist in relation to)

IT 1303-00-0, Gallium arsenide, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(fabrication of T-gate submicron structures using Leica VB-5HR electron-beam lithog. system with tri-layer resist)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(middle layer; fabrication of T-gate submicron structures using Leica VB-5HR electron-beam lithog. system with tri-layer **resist**)
IT 9011-14-7, PMMA
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(top and bottom layer; fabrication of T-gate submicron structures using Leica VB-5HR electron-beam lithog. system with tri-layer resist)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(middle layer; fabrication of T-gate submicron structures using Leica VB-5HR electron-beam lithog. system with tri-layer **resist**)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

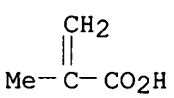
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 5 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:82309 HCAPLUS
DN 136:142611
TI Positive-working radiation-sensitive resist composition
IN Senoo, Masahide; Tamura, Kazutaka; Nio, Hiroyuki
PA Toray Industries, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002031891	A2	20020131	JP 2000-216050	20000717
PRAI	JP 2000-216050		20000717		

AB The composition comprises a polymer having repeating units CH2CX(CO2A) and CH2CY(CO2B) (X = C1-6 alkyl, halo, cyano; A is an organic group containing an aromatic ring. and is bonded with O through tertiary C; Y = C1-6 alkyl, H, halo, cyano; when X = alkyl, B = C2-16 organic group containing secondary or tertiary alc. OH group; when X = halo or cyano, B = C1-16 organic group containing primary, secondary, or tertiary alc. OH group) and an acid generator. The composition provides high **resolution** and sensitivity and is especially suitable for patterning semiconductor integrated circuits, **lithog**. masks, etc.

IC ICM G03F007-039
ICS C08F220-16; C08F220-42; C08K005-00; C08L033-14; C08L033-22; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 76

ST pos working radiation sensitive resist compn hydroxyl acrylate copolymer

IT Electron beam resists
Semiconductor device fabrication
X-ray resists
(pos.-working radiation-sensitive resist composition containing OH group-containing acrylate copolymer)

IT 66003-78-9, Triphenylsulfonium triflate
RL: TEM (Technical or engineered material use); USES (Uses)
(acid generator; pos.-working radiation-sensitive resist composition containing OH group-containing acrylate copolymer)

IT 393178-18-2, 2-Hydroxybutyl methacrylate-1-methyl-1-phenylethyl methacrylate copolymer 393178-19-3, 1,1-Diphenylethyl methacrylate-2-hydroxy-2-methylpropyl methacrylate copolymer 393178-20-6, 2-Hydroxyethyl methacrylate-1-methyl-1-phenylethyl-α-chloroacrylate copolymer 393178-21-7 **393178-22-8** 393178-23-9, 2-Hydroxyethyl methacrylate-1-methyl-1-phenylethyl-α-cyanoacrylate copolymer 393178-24-0, 2-Hydroxypropyl methacrylate-1-methyl-1-phenylethyl-α-cyanoacrylate copolymer 393178-27-3, 1,1-Diphenylethyl-α-cyanoacrylate-p-(1-hydroxy-1-methylethyl)phenyl methacrylate copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(pos.-working radiation-sensitive **resist** composition containing OH group-containing acrylate copolymer)

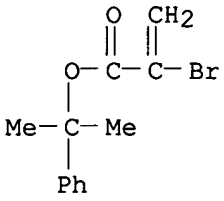
IT **393178-22-8**
RL: TEM (Technical or engineered material use); USES (Uses)
(pos.-working radiation-sensitive **resist** composition containing OH group-containing acrylate copolymer)

RN 393178-22-8 HCAPLUS

CN 2-Propenoic acid, 2-bromo-, 1-methyl-1-phenylethyl ester, polymer with 1-hydroxy-1-methylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

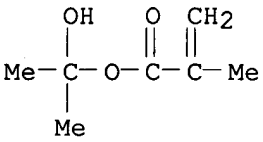
CM 1

CRN 334474-43-0
CMF C12 H13 Br O2



CM 2

CRN 2791-00-6
CMF C7 H12 O3



L59 ANSWER 6 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:893616 HCAPLUS
DN 136:175377
TI **Nanometer** scale patterning of Langmuir-Blodgett films of gold **nanoparticles** by electron beam lithography
AU Werts, Martinus H. V.; Lambert, Mathieu; Bourgoin, Jean-Philippe; Brust, Mathias
CS Service de Chimie Moleculaire, CEA/Saclay, Gif-sur-Yvette, F-91191, Fr.
SO Nano Letters (2002), 2(1), 43-47
CODEN: NALEFD; ISSN: 1530-6984
PB American Chemical Society
DT Journal
LA English
AB Electron beam lithog. on Langmuir-Blodgett films of alkanethiol-capped gold **nanoparticles** is shown to be a viable strategy to define **nanometer** scale structures of such particles. Sub-50 nm wide "**nanowires**", the thickness of which is controlled at the single particle level, are created with e-beam doses in the mC/cm2 range. It is shown that the patterns are formed by radiation-induced crosslinking of the alkyl chains and that they can be contacted and studied elec.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 76
ST electron lithog Langmuir Blodgett film alkanethiol capped gold **nanoparticle**
IT Electron beam lithography
Langmuir-Blodgett films
Nanoparticles
(electron-beam lithog. on Langmuir-Blodgett films of alkanethiol-capped gold **nanoparticles**)
IT Self-assembly
(electron-beam lithog. on Langmuir-Blodgett films of gold **nanoparticles** covers with self-assembling monolayers of alkanethiol)

IT 111-31-9, n-Hexanethiol 112-55-0, n-Dodecanethiol 7440-57-5, Gold, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(electron-beam lithog. on Langmuir-Blodgett films of alkanethiol-capped gold **nanoparticles**)

IT 9011-14-7, PMMA **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: NUU (Other use, unclassified); USES (Uses)
(lithog. fabrication of four probe electrodes including electron-beam patterning of Langmuir-Blodgett films of alkanethiol-capped gold **nanoparticles** and **resist** bilayer containing)

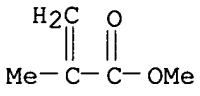
IT 75-79-6, Methyltrichlorosilane 919-30-2, Aminopropyltriethoxysilane 999-97-3, Hexamethyldisilazane 7440-21-3, Silicon, uses 7631-86-9, Silica, uses
RL: NUU (Other use, unclassified); USES (Uses)
(wafer; electron-beam lithog. on Langmuir-Blodgett films of alkanethiol-capped gold **nanoparticles** on silanized silica/silicon wafer)

IT **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: NUU (Other use, unclassified); USES (Uses)
(lithog. fabrication of four probe electrodes including electron-beam patterning of Langmuir-Blodgett films of alkanethiol-capped gold **nanoparticles** and **resist** bilayer containing)

RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

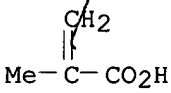
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



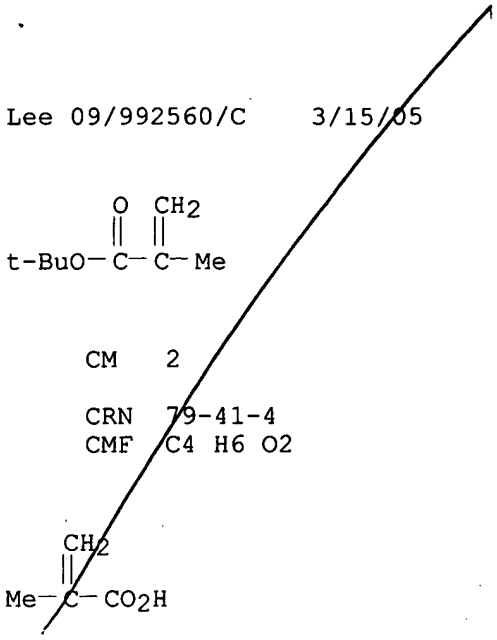
RE.CNT 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 7 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:378883 HCAPLUS
DN 135:160083
TI Crosslinkable positive-tone photoresist comprising polymers with pendant carboxyl groups

AU Liu, Jui-Hsiang; Shi, Chih-Hung; Chen, We-Tin
CS Department of Chemical Engineering, National Cheng Kung University, Tainan, 70101, Taiwan
SO Journal of Applied Polymer Science (2001), 81(4), 1014-1020
CODEN: JAPNAB; ISSN: 0021-8995
PB John Wiley & Sons, Inc.
DT Journal
LA English
AB Poly(methacrylic acid-co-t-butylmethacrylate-co-bornyl methacrylate) was synthesized and its application to a crosslinkable pos. photoresist was investigated. The existence of pendant alicyclic bornyl groups increased the thermostability of copolymers; however, a decrease in the acid-catalyzed deprotection of pendant t-Bu groups led to a decrease in the sensitivity of the pos.-tone photoresist. The thermostability of the relief polymeric patterns of the pos.-tone photoresist was appreciably improved effectively because of the acid-catalyzed dehydration crosslinking of pendant carboxyl groups. Thermogravimetric properties of binder resins, exposure characteristics, and sensitivity and **resolution** of the photoresist were all investigated. **Lithog**. evaluation of the curable pos.-tone photoresists was also estimated
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 35, 38
ST acrylic polymer photoresist pendant carbonyl; thermal stability photoresist
IT IR spectra
Photoresists
Thermal stability
(crosslinkable pos.-tone photoresist comprising polymers with pendant carboxyl groups)
IT **35343-63-6P**, Methacrylic acid-tert-butyl methacrylate copolymer
352454-65-0P
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(crosslinkable pos.-tone **photoresist** comprising polymers with pendant carboxyl groups)
IT 174804-72-9P
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(crosslinked; crosslinkable pos.-tone photoresist comprising polymers with pendant carboxyl groups)
IT **35343-63-6P**, Methacrylic acid-tert-butyl methacrylate copolymer
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(crosslinkable pos.-tone **photoresist** comprising polymers with pendant carboxyl groups)
RN 35343-63-6 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 585-07-9
CMF C8 H14 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2

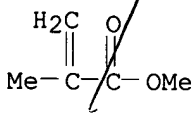
RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 8 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:541590 HCAPLUS
DN 133:303348
TI Bilayer, **nanoimprint lithography**
AU Faircloth, Brian; Rohrs, Henry; Tiberio, Richard; Ruoff, Rodney; Krchnavek, Robert R.
CS Nuvonyx, Inc., Bridgeton, MO, 63044, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (2000), 18(4), 1866-1873
CODEN: JVTBD9; ISSN: 0734-211X
PB American Institute of Physics
DT Journal
LA English
AB **Nanoimprint lithog.** has been shown to be a viable means of patterning polymer films in the sub-100 nm range. In this work, we demonstrate the use of a bilayer resist to facilitate the metal liftoff step in imprinter fabrication. The bilayer resist technol. exhibits more uniform patterns and fewer missing features than similar metal **nanoparticle** arrays fabricated with single layer resist. The bilayer resist relies upon the differential solubility between poly(Me methacrylate) and poly(Me methacrylate methacrylic acid copolymer). Evidence is presented that shows the technique has a **resolution** of better than 10 nm.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 38
ST **nanoimprint lithog** bilayer acrylic resist
IT Etching
Resists
Vapor deposition process
(bilayer-resist **nanoimprint lithog.**)
IT Sputtering
Sputtering
(etching, reactive; bilayer-resist **nanoimprint lithog**.)
IT Fluoropolymers, uses
RL: NUU (Other use, unclassified); USES (Uses)
(hyperbranched, mold release agent; bilayer-resist **nanoimprint lithog.**)

IT Etching
(plasma; bilayer-resist **nanoimprint lithog.**)
IT Etching
Etching
(sputter, reactive; bilayer-resist **nanoimprint lithog**
.)
IT **Lithography**
(submicron; bilayer-resist **nanoimprint lithog.**)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(bilayer-**resist nanoimprint lithog.**)
IT 7440-02-0, Nickel, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(dot **nanoarray**; bilayer-resist **nanoimprint lithog.**)
IT 67-56-1, Methanol, processes 75-73-0, Tetrafluoromethane 108-90-7, Chlorobenzene, processes 1333-74-0, Hydrogen, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(etchant; bilayer-resist **nanoimprint lithog.**)
IT 67-64-1, Acetone, uses 75-09-2, Methylene chloride, uses
RL: NUU (Other use, unclassified); USES (Uses)
(liftoff soaking agent; bilayer-resist **nanoimprint lithog.**)
IT 7440-47-3, Chromium, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**nanoarray**; bilayer-resist **nanoimprint lithog.**)
IT 7782-44-7, Oxygen, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(plasma etching; bilayer-resist **nanoimprint lithog**
.)
IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(substrate; bilayer-resist **nanoimprint lithog.**)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(bilayer-**resist nanoimprint lithog.**)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

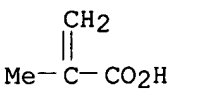
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 9 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1999:467456 HCAPLUS
DN 131:206850
TI Chemically amplified negative resists based on alicyclic acrylate polymers for 193-nm **lithography**
AU Iwasa, Shigeyuki; Maeda, Katsumi; Hasegawa, Etsuo
CS Functional Materials Research Laboratories, NEC Corporation, Kanagawa, 216-8555, Japan
SO Journal of Photopolymer Science and Technology (1999), 12(3), 487-492
CODEN: JSTEEW; ISSN: 0914-9244
PB Technical Association of Photopolymers, Japan
DT Journal
LA English
AB We have evaluated the effects of polymer structure on chemical amplified neg. resists in terms of alkaline solubility, adhesion, and **lithog.** performance. Poly(hydroxytricyclo [5.2.1.02,6]decyl acrylate (TCDAOH)67 - carboxytetracyclo[4.4.0.12,517,10]dodecyl acrylate (CTCDDA)33) exhibits sufficient alkaline solubility (dissoln. rate (DR): 0.56 μm/s in 2.38 wt% TMAH solution) for use as a neg. resist polymer, and a resist based on this polymer provides 0.17 μm line-and-space (L/S) **resolution** By way of contrast, poly(TCDAOH60-CTCDDA40) (D.R.: 0.95 μm/s) dose not provide good **resolution** because the developer permeates into the pattern. To improve adhesion, we have developed three new acrylate monomers: 3,4-epoxytricyclo[5.2.1.02,6]decyloxyethyl acrylate (ETCDEA), 5-acryloyloxy-6-hydroxynorbornane-2-carboxylic 6-lactone (AHNCL), and 3,4-dihydoroxy tricyclo[5.2.1.02,6]decyloxyethyl (meth)acrylate (DTCDE(M)A). A resist based on poly(TCDAOH64-CTCDDA31-DTCDEA5) provided a 0.15-μm- **resolution** isolated line pattern, and a resist based on poly(ETCDEA42-CTCDDA32-AHNCL26) provided a 0.13-μm- **resolution** isolated line pattern. Both patterns were free of pattern stripping.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 35, 37
ST chem amplified neg resist alicyclic acrylate polymer **lithog**
IT Epoxy resins, properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(alicyclic; chemical amplified neg. resists based on alicyclic acrylate polymers for 193-nm **lithog.**)
IT Adhesion, physical
Dissolution rate
Lithography
(chemical amplified neg. resists based on alicyclic acrylate polymers for 193-nm **lithog.**)
IT Resists
(neg.-working; chemical amplified neg. resists based on alicyclic acrylate polymers for 193-nm **lithog.**)

IT 242136-37-4 242136-38-5 242136-39-6 242136-40-9 **242136-41-0**
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(chemical amplified neg. **resists** based on alicyclic acrylate polymers for 193-nm **lithog.**)

IT 113382-79-9 140919-17-1 140919-18-2 242129-35-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(chemical amplified neg. resists based on alicyclic acrylate polymers for 193-nm **lithog.**)

IT 211377-75-2
RL: TEM (Technical or engineered material use); USES (Uses)
(chemical amplified neg. resists based on alicyclic acrylate polymers for 193-nm **lithog.**)

IT 17464-88-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(crosslinker; chemical amplified neg. resists based on alicyclic acrylate polymers for 193-nm **lithog.**)

IT 66003-78-9, Triphenylsulfonium triflate
RL: RCT (Reactant); RACT (Reactant or reagent)
(photoacid; chemical amplified neg. resists based on alicyclic acrylate polymers for 193-nm **lithog.**)

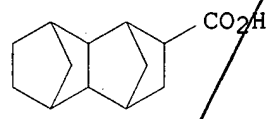
IT **242136-41-0**
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(chemical amplified neg. **resists** based on alicyclic acrylate polymers for 193-nm **lithog.**)

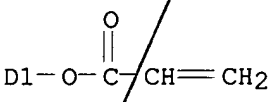
RN 242136-41-0 HCAPLUS

CN 1,4:5,8-Dimethanonaphthalene-2-carboxylic acid, decahydro-6(or 7)-[(1-oxo-2-propenyl)oxy]-, polymer with 2-[(octahydro-2,5-methano-2H-indeno[1,2-b]oxirenyl)oxy]ethyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

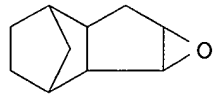
CRN 195398-52-8
CMF C16 H20 O4
CCI IDS

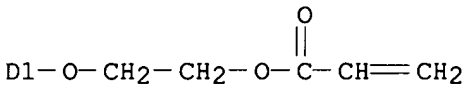




CM 2

CRN 113382-79-9
CMF C15 H20 O4
CCI IDS





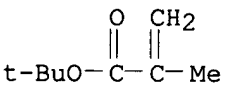
RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 10 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1998:776503 HCAPLUS
DN 130:160499
TI The design and study of water-soluble positive- and negative-tone imaging materials
AU Havard, Jennifer M.; Pasini, Dario; Frechet, Jean M. J.; Medeiros, David; Patterson, Kyle; Yamada, Shintaro; Willson, C. Grant
CS Department of Chemistry, University of California-Berkeley, Berkeley, CA, 94720-1460, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (1998), 3333(Pt. 1, Advances in Resist Technology and Processing XV), 111-121
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
AB The interest in imaging materials with improved environmental characteristics led one to consider imaging formulations coated from and developed in aqueous media, thus avoiding the need for both organic solvents and basic aqueous developer solns. The authors have previously reported on the design of several neg.-tone resists operating via radiation-induced crosslinking, and while the performance of these neg.-tone systems met the basic goals, the **resolution** that could be achieved was limited due to swelling occurring during development. The authors now report on various other designs based on polyoxazoline, poly(vinyl alc.), and methacrylate resins that circumvent this problem with approaches towards both neg.- and pos.-tone systems.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST design water soluble neg pos polymer photoresist **lithog** imaging
IT Photoresists
(design and study of water-soluble polyoxazolin-based pos.- and neg.-tone polymers for chemical amplified photoresists)
IT Photoimaging
(polymeric; design and study of water-soluble polyoxazolin-based pos.- and neg.-tone polymers for chemical amplified photoresists)
IT 10471-78-0D, 2-Isopropenyl-2-oxazoline, polymers 214149-86-7 214149-87-8 220159-50-2 220159-53-5
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(design and study of water-soluble polyoxazoline-based pos.- and neg.-tone polymers for chemical amplified photoresists)

IT 2210-25-5, N-Isopropylacrylamide
RL: RCT (Reactant); RACT (Reactant or reagent)
(design and study of water-soluble polyoxazoline-based pos.- and neg.-tone polymers for chemical amplified photoresists)
IT **35343-63-6**, tert-Butyl methacrylate-methacrylic acid copolymer
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(design and study of water-soluble pos.- and neg.-tone imaging methacrylate polymers for chemical amplified **photoresists**)
IT 7732-18-5, Water, processes 57840-38-7, Triphenylsulfonium hexafluoroantimonate 180787-54-6 214149-84-5
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(design and study of water-soluble pos.- and neg.-tone imaging polymers for chemical amplified photoresists)
IT 9002-89-5D, Poly(vinyl alcohol), hydrolyzed, reaction product with di-tert-Bu dicarbonate 24424-99-5D, Di-tert-butyl dicarbonate, reaction products with hydrolyzed poly(vinyl alc.)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(design and study of water-soluble pos.- and neg.-tone imaging polymers for chemical amplified photoresists)
IT **35343-63-6**, tert-Butyl methacrylate-methacrylic acid copolymer
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(design and study of water-soluble pos.- and neg.-tone imaging methacrylate polymers for chemical amplified **photoresists**)
RN 35343-63-6 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

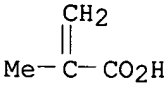
CM 1

CRN 585-07-9
CMF C8 H14 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

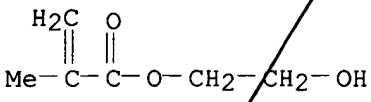
L59 ANSWER 11 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1998:470302 HCAPLUS
DN 129:223136

TI A new family of non-chemically amplified resists
AU Aviram, Ari; Angelopoulos, Marie; Babich, Edward; Babich, Inna; Petrillo, Karen; Seeger, David
CS IBM Research Division, T.J. Watson Research Center, Yorktown Hts., NY, 10598, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (1998), 3331(Emerging Lithographic Technologies II), 349-358
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
AB Non-chemical amplified resists offer advantages over chemical-amplified (CA) resists because they are less susceptible to temperature variations and contaminants. In order for non-CA resists to be viable, they have to perform **lithog.** at an equivalent level with the CA resists from the points of view of quantum yield, **resolution**, and etch resistance. We report here on new non-CA resists based on polymer esters that undergo deesterification to the corresponding acids upon exposure to UV, x-ray and e-beam radiation. The efficiency of the radiation reaction is surprisingly high. The resulting poly acids are base soluble and can be employed as pos. working resists. The resists are composed of polymers and copolymers of methacrylate esters. The sensitivity of one derivative to x-ray is 75 mJ/cm2 and to e-beam is 1.0 μC/cm2 at 10 KV. Best **resolution** obtained was 125 nm with x-ray radiation.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 38, 76
ST **lithog** resist polyester deesterification; UV exposure polyester resist deesterification; electron beam exposure polyester resist deesterification; x ray exposure polyester resist deesterification
IT Absorption spectra
Electron beams
Lithography
Photochemistry
Resists
Saponification
UV radiation
X-ray
(new family of non-chemical amplified resists)
IT Polyesters, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(new family of non-chemical amplified resists)
IT **31693-08-0DP**, 2-Hydroxyethyl methacrylate-methacrylic acid copolymer, reaction product with N,N-Diethylformamide
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(new family of non-chemical amplified **resists**)
IT 617-84-5D, N,N-Diethylformamide, reaction product with 2-Hydroxyethyl methacrylate homopolymer
RL: RCT (Reactant); RACT (Reactant or reagent)
(new family of non-chemical amplified resists)
IT 25087-26-7, Methacrylic acid homopolymer 25249-16-5, 2-Hydroxyethyl methacrylate homopolymer
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(new family of non-chemical amplified resists)
IT **31693-08-0DP**, 2-Hydroxyethyl methacrylate-methacrylic acid copolymer, reaction product with N,N-Diethylformamide
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material

use); PREP (Preparation); USES (Uses)
(new family of non-chemical amplified **resists**)
RN 31693-08-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 2-hydroxyethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

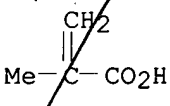
CM 1

CRN 868-77-9
CMF C6 H10 O3



CM 2

CRN 79-41-4
CMF C4 H6 O2



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 12 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1998:334773 HCAPLUS
DN 129:74054
TI Transparent resins, photosensitive resin compositions containing the same suitable for **lithography**, and manufacture of semiconductor devices having high-**resolution** resist patterns using the same
IN Kumata, Teruhiko; Sasahara, Atsuko; Oshida, Atsushi; Yoshida, Ikuhiro; Adachi, Hiroshi
PA Mitsubishi Electric Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

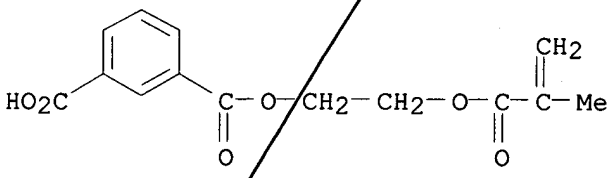
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10140018	A2	19980526	JP 1996-293852	19961106
PRAI	JP 1996-293852		19961106		

AB The title compns. highly sensitive in short wavelength region (e.g., ArF excimer laser, etc.) and durability to dry etching comprise resins having m-R1C6H4R2 group (R1 = CO, SO2; R2 = CO2R3, COR3, NO2, NO, CN, CF3, R42S+ X-, R34N+ X-; R3 = H, C1-10 hydrocarbyl; R4 = H, C1-4 hydrocarbyl; X = F, Cl, I, tosyl, mesityl, triflyl) and acid-decomposable group and compds. generating acids upon light irradiation
IC ICM C08L101-02
ICS G03F007-039; G03F007-20; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other

Reprographic Processes)
Section cross-reference(s): 76
ST photoresist semiconductor device
IT Photoresists
Semiconductor devices
Transparent materials
(transparent resins, photosensitive resin compns. containing the same suitable for **lithog.**, and manufacture of semiconductor devices having high-**resolution** resist patterns using the same)
IT 209049-45-6P **209049-46-7P** 209049-48-9P 209049-50-3P
209049-52-5P 209049-54-7P 209049-56-9P 209049-57-0P
209049-58-1P 209049-59-2P 209049-61-6P 209049-63-8P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(transparent resins, photosensitive resin compns. containing the same suitable for **lithog.**, and manufacture of semiconductor devices having high-**resolution resist** patterns using the same)
IT **209049-46-7P 209049-58-1P**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(transparent resins, photosensitive resin compns. containing the same suitable for **lithog.**, and manufacture of semiconductor devices having high-**resolution resist** patterns using the same)
RN 209049-46-7 HCAPLUS
CN 1,3-Benzenedicarboxylic acid, mono[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl] ester, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

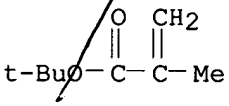
CM 1

CRN 87700-99-0
CMF C14 H14 O6



CM 2

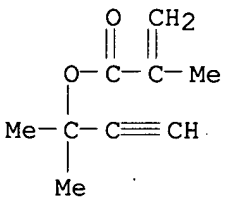
CRN 585-07-9
CMF C8 H14 O2



RN 209049-58-1 HCAPLUS
CN 1,3-Benzenedicarboxylic acid, mono[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl] ester, polymer with 1,1-dimethyl-2-propynyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

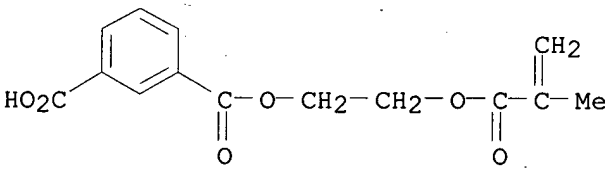
CM 1

CRN 141550-36-9
CMF C9 H12 O2



CM 2

CRN 87700-99-0
CMF C14 H14 O6



L59 ANSWER 13 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1997:705335 HCAPLUS
DN 128:28521
TI Novel resist and exposure strategy for high-**resolution** electron-beam **lithography**
AU Daumann, Walter; Bertenburg, Ralf M.; Van Den Berg, Christoph; Tegude, Franz-Josef
CS Solid-State Electronics Department, Gerhard-Mercator-University Duisburg, Sonderforschungsbereich SFB 254, Duisburg, D-47057, Germany
SO Proceedings of SPIE-The International Society for Optical Engineering (1997), 3155(Charged Particle Optics III), 155-162
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
AB We will present a new resist and exposure strategy applicable to the fabrication of sub-micron gate-length heterostructure field-effect transistors (HFET) with T-shaped (mushroom) gate contacts. Using selected polymethylmethacrylate (PMMA) resists as well as copolymers (polymethylmethacrylate/methacrylic acid: PMMA/MAA) and by optimization of the layer thicknesses we have established an electron-beam **lithog** . process for fabrication of 0.1 μm mushroom-gates. Main advantages of this new concept are the necessity of low accelerating voltages of only ≤ 10 kV as well as an adapted thickness of the resist stack which, furthermore, guarantees a large cross-sectional area and hence, low contact resistance. Addnl., an excellent lift-off behavior is obtained. Due to the low accelerating voltage any standard scanning electron microscope can be applied for sub-micron mushroom-gate **lithog**. which drops

costs drastically. The complete fabrication process including gate-recess etching shows an excellent reproducibility which guarantees good process control and high yield. The achieved results are comparable with well established T-gate processes, thus this new concept should be directly applicable in standard process lines. It should be pointed out that all exposure parameters become almost independent of the substrate property, because the dissipation volume is completely located within the resist layer stack. Thus, the contribution of backscattered electrons to the total dose is negligible.

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 76

ST resist **lithog** heterostructure field effect transistor; high **resoln** electron beam **lithog** HFET

IT Etching
(gate-recess etching in fabrication of 0.1 μm mushroom-gates)

IT Process control
(good process control and high yield in fabrication of 0.1 μm mushroom-gates)

IT Thickness
(optimization of PMMA and PMMA/MAA resist layer thicknesses for electron-beam **lithog.** process for fabrication of 0.1 μm mushroom-gates)

IT Field effect transistors
Resists
(resist and exposure strategy for fabrication of sub-micron gate-length heterostructure field-effect transistors with T-shaped gate contacts)

IT Electron beam **lithography**
(resist and exposure strategy in high-**resolution** electron-beam **lithog.**)

IT 9011-14-7, PMMA **25086-15-1**, Methylmethacrylate-methacrylic acid copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(electron-beam **lithog.** process for fabrication of 0.1 μm mushroom-gates using selected PMMA and PMMA/MAA **resists**)

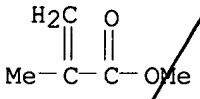
IT **25086-15-1**, Methylmethacrylate-methacrylic acid copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(electron-beam **lithog.** process for fabrication of 0.1 μm mushroom-gates using selected PMMA and PMMA/MAA **resists**)

RN 25086-15-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

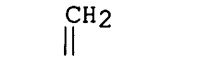
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L59 ANSWER 14 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1997:471374 HCAPLUS
DN 127:227273
TI Chemically amplified resist based on high etch-resistant polymers for 193-nm **lithography**
AU Nakano, Kaichiro; Maeda, Katsumi; Iwasa, Shigeyuki; Hasegawa, Etsuo
CS Functional Devices Research Laboratories, NEC Corporation, Kawasaki, 216, Japan
SO Journal of Photopolymer Science and Technology (1997), 10(4), 561-570
CODEN: JSTEEW; ISSN: 0914-9244
PB Technical Association of Photopolymers, Japan
DT Journal
LA English
AB This paper describes the properties of our new alicyclic-methacrylate polymer, poly(carboxy-tetracyclo[4.4.0.12,5.17,10]dodecyl methacrylate) (poly(CTCDDMA)), which was designed as a base polymer for the resist for ArF excimer laser **lithog**. The etching rate of the polymer for chlorine plasma was 1.15 times that for a novolak-based resist, indicating a higher etching durability than that of poly(p-vinylphenol). We also studied the adhesion properties of an alicyclic-methacrylate polymer by estimating the work of adhesion using poly(carboxy-tricyclo[5.2.1.02,6]decylmethyl methacrylate) (poly(CTCDMA)). We found that the adhesion decreased with an increase in the protection ratio for the polymer, and 60% tert-Bu protection caused stripping and collapse of the resist pattern in the standard developer, 2.38% tetramethylammonium hydroxide (TMAH) aqueous solution We obtained appropriate adhesion using a diluted TMAH aqueous solution as a developer and found that a proper developer-concentration could be determined using the work of adhesion of a polymer. Addnl., we confirmed that introducing a ≥20% hydroxy-tricyclodecyl(meth)acrylate (TCD(M)AOH) unit into the polymer raised the work of adhesion to 74.0mN/m, which was higher than that of the novolak-based resist (73.5mN/m). This made possible the pattern **resolution** of a poly(CTCDMA)-based resist in the standard developer. We obtained a 0.35-μm pattern using a resist based on a terpolymer containing TCDAOH and the standard developer. The chemical amplified resist composed of a 33% ethoxyethyl-protected poly(CTCDDMA) and N-hydroxysuccinimide tosylate **resolved** a 0.15-μm L&S pattern at a dosage of 21.8 mJ/cm2, with an ArF prototype lens (NA = 0.55) and using a 0.024% TMAH developer.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST chem amplified resist etch resistant polymer; etch resistant polymer excimer laser **lithog**
IT Adhesion, physical
Dissolution rate
Etching
Photolithography
Photoresists

(chemical amplified resist based on high etch-resistant polymers for excimer laser **lithog.**)

IT 75-11-6, Methylene iodide 7732-18-5, Water, properties
RL: PRP (Properties)
(calcn. of surface free energy for polymer using surface tension values of water and methylene iodide)

IT 171439-99-9 184856-64-2 195131-22-7 195131-24-9 **195131-25-0**
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(chemical amplified **resist** based on high etch-**resistant** polymers for excimer laser **lithog.**)

IT 75-59-2, Tetramethylammonium hydroxide
RL: TEM (Technical or engineered material use); USES (Uses)
(developer; chemical amplified resist based on high etch-resistant polymers for excimer laser **lithog.**)

IT 7782-50-5, Chlorine, processes 10035-10-6, Hydrogen bromide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(etchant; chemical amplified resist based on high etch-resistant polymers for excimer laser **lithog.**)

IT 6066-82-6, N-Hydroxysuccinimide 66003-78-9, Triphenylsulfonium triflate
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; chemical amplified resist based on high etch-resistant polymers for excimer laser **lithog.**)

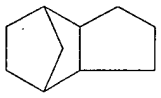
IT **195131-25-0**
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(chemical amplified **resist** based on high etch-**resistant** polymers for excimer laser **lithog.**)

RN 195131-25-0 HCAPLUS

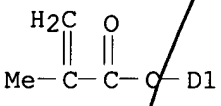
CN 4,7-Methano-1H-indenecarboxylic acid, octahydro[[(2-methyl-1-oxo-2-propenyl)oxy]methyl]-, polymer with octahydrohydroxy-4,7-methano-1H-indenyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 195131-23-8
CMF C14 H20 O3
CCI IDS



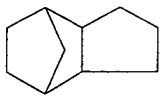
D1—OH



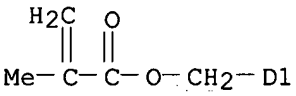
CM 2

CRN 184856-56-2

CMF C16 H22 O4
CCI IDS



D1—CO_2H



L59 ANSWER 15 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1995:829569 HCAPLUS
DN 124:18228
TI Multilayer process of T-shaped transistor gates for GaAs-pseudomorphic HEMTs using electron-beam resist technology and i-line negative resist with optical stepper **lithography**
AU Schneider, Joachim; Becker, Fred; Glorer, Karlheinz; Weismann, Birgit; Muenzel, Norbert
CS Fraunhofer-Institute Applied Solid State Physics, Freiburg/Br., D-79108, Germany
SO Proceedings of SPIE-The International Society for Optical Engineering (1995), 2438(Advances in Resist Technology and Processing XII), 717-25
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
AB A novel process for the fabrication of T-gates (mushroom gates) with a base dimension of 0.2 μm (gate length) and a top dimension of 0.6 μm is presented. A two-layer resist system, in which first the bottom of the gate structure was patterned with a one-layer electron-beam (e-beam) resist P(MMA/MAA) and then the top of the structure was patterned with an optical wafer stepper exposure and development of an exptl. i-line neg. resist (LMB 7011). The crosslinked bottom resist (prebake temperature 170°C) was exposed with Leica e-beam system EBPG-5HR. The top resist was patterned with i-line wafer stepper ASM-L 2500/40. For this exposure a rim phase shift reticle was used to increase the **resoln**. limit of the stepper from 0.7 μm to 0.5 μm. During exposure of the top resist, there was light reflection from the alloyed ohmic contacts (source and drain electrodes) into the unexposed region of the T-gate. To avoid this effect a top antireflective coating (TAR) was used. Elec. results on test devices and microwave transistors were presented. S-parameter measurements, up to 75 GHz, were performed on T-gate transistors with the standard HEMT-structure.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 76
ST transistor gate **lithog** electron beam resist
IT Transistors
(gates; **lithog**. process with two-layer resist system in

fabrication of transistor T-gates)

IT Resists
(electron-beam, **lithog.** process with two-layer resist system in fabrication of transistor T-gates)

IT Resists
(photo-, **lithog.** process with two-layer resist system in fabrication of transistor T-gates)

IT **25086-15-1**, Methyl methacrylate-methacrylic acid copolymer
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(electron-beam **resist**; **lithog.** process with two-layer **resist** system in fabrication of transistor T-gates)

IT 1303-00-0, Gallium arsenide, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**lithog.** process with two-layer resist system in fabrication of transistor T-gates)

IT 143549-75-1, Aquatar
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**lithog.** process with two-layer resist system in fabrication of transistor T-gates)

IT 162355-03-5, OCG-LMB 7011
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(photoresist; **lithog.** process with two-layer resist system in fabrication of transistor T-gates)

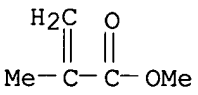
IT **25086-15-1**, Methyl methacrylate-methacrylic acid copolymer
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(electron-beam **resist**; **lithog.** process with two-layer **resist** system in fabrication of transistor T-gates)

RN 25086-15-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

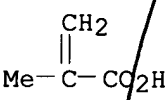
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2

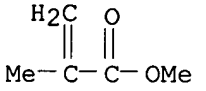


L59 ANSWER 16 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1995:76163 HCAPLUS
DN 122:302798
TI Dual-mode behavior of vinyl ether functionalized photoresist
AU Yamaoka, Tsuguo; Kamenosono, Kouji; Moon, Seongyun; Naitoh, Kazuhiko; Kondo, Syun-ichi; Umehara, Akira
CS Department of Image Science, Chiba University, Chiba, 263, Japan
SO Journal of Photopolymer Science and Technology (1994), 7(3), 533-6
CODEN: JSTEEW; ISSN: 0914-9244
DT Journal
LA English
AB A series of dual-mode photoresist (VEC) based on the unique reactions of vinyl ether groups were studied and found to provide high **resoln**. with deep-UV exposure. The VEC resist behaves as a dual-mode resist which works as a neg. and a pos. resist depending on the process after the exposure. The reaction mode of vinyl ethers was chosen for this study. Vinyl ether groups with electron rich bonds produce stable carbocations that initiate rapid cationic polymerization The cationic polymerization of vinyl ethers offers highly sensitive photopolymers because of their large kinetic chain length and their oxygen sensitivity. Based on these unique reactions of vinyl ether groups, a series of photoresists were synthesized. In 3-component systems, an aqueous base of soluble polymers containing phenolic or carboxyl groups, multifunctional vinyl ether monomers and photoacid generator are the main composition The 3-component systems offer also the dual mode to work as a neg. or pos. resist depending upon the process condition. The **lithog.** characteristics are variable depending upon the structure of the polymer matrix, functionality of vinyl ether monomer, photoacid generator and on the process condition. Detailed reaction mechanisms and resist characteristics are discussed.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST photoresist vinyl ether polymer photoacid generator; **lithog** pos neg dual mode photoresist
IT Phenolic resins, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(novolak, cresol-based, pos. and neg. dual-mode behavior of vinyl ether functionalized photoresist containing)
IT Resists
(photo-, dual-mode; pos. and neg. dual-mode behavior of vinyl ether functionalized photoresist containing)
IT 137308-86-2, Diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate 146793-37-5, Diphenyliodonium 8-Anilinonaphthalene-1-sulfonate
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(photoacid generator; pos. and neg. dual-mode behavior of vinyl ether functionalized photoresist containing)
IT 24979-70-2, Poly(4-hydroxystyrene) **25322-25-2**, Acrylic acid-methyl methacrylate copolymer 26898-31-7, Acrylic acid-butyl methacrylate-methyl methacrylate co-polymer 150465-76-2
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(pos. and neg. dual-mode behavior of vinyl ether functionalized **photoresist** containing)
IT **25322-25-2**, Acrylic acid-methyl methacrylate copolymer
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(pos. and neg. dual-mode behavior of vinyl ether functionalized

photoresist containing)
RN 25322-25-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 2-propenoic acid (9CI) (CA INDEX NAME)

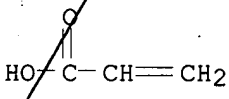
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-10-7
CMF C3 H4 O2



L59 ANSWER 17 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1994:231694 HCAPLUS
DN 120:231694
TI Designing high performance krypton monofluoride and argon monofluoride single-layer resists with methacrylate polymers
AU Allen, Robert D.; Wallraff, Gregory M.; Hinsberg, William D.; Conley, Willard E.; Kunz, Roderick R.
CS Almaden Res. Cent., IBM, San Jose, CA, 95120-6099, USA
SO Journal of Photopolymer Science and Technology (1993), 6(4), 575-91
CODEN: JSTEEW; ISSN: 0914-9244
DT Journal
LA English
AB The authors discuss two approaches to chemical amplified pos. resists involving the use of a new and versatile class of acid-labile methacrylate polymers. Methacrylate terpolymers originally designed as chemical amplified pos. resists for printed circuit board technol. were found to have excellent optical transmission at 193 nm. These materials serve as the basis for a high **resolution** single layer resist for ArF imaging. In addition, these terpolymers form stable, one-phase mixts. with a variety of phenolic resins and strongly inhibit the dissoln. of phenolics in aqueous base. The new dissoln. inhibitors based on methacrylic acid-tert-Bu methacrylate-Me methacrylate terpolymers have unusual and useful properties, including excellent optical transmission at 248 nm, high glass transition temps., and dissoln. inhibition/promotion power which can be tailored to accommodate the dissoln. properties of a wide variety of phenolic resins.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST methacrylate terpolymer photoresists excimer laser **lithog**
IT Phenolic resins, uses

RL: USES (Uses)
(novolak, blends with methacrylate terpolymers, as chemical amplified photoresists for excimer laser **lithog.**)

IT Resists
(photo-, pos.-working, chemical amplified, single-layer with methacrylate terpolymer, for excimer laser **lithog.**)

IT 29322-78-9, Poly(3-methyl-4-hydroxystyrene)
RL: USES (Uses)
(**lithog.** chemical amplified pos. photoresists containing methacrylate terpolymer and , for excimer laser exposures)

IT 66003-78-9, Triphenylsulfonium triflate
RL: USES (Uses)
(**lithog.** chemical amplified pos. photoresists containing methacrylate terpolymer and polymethylhydroxystyrene and , for excimer laser exposures)

IT 84563-54-2, Bis(tert-butylphenyl)iodonium triflate
RL: USES (Uses)
(**lithog.** chemical amplified pos. photoresists containing methacrylate terpolymer and, for excimer laser exposures)

IT 28549-51-1, tert-Butyl methacrylate-methyl methacrylate copolymer
RL: USES (Uses)
(**lithog.** chemical amplified pos. photoresists containing phenolic resin blend with, for excimer laser exposures)

IT **35343-63-6**, tert-Butyl methacrylate-methacrylic acid copolymer
RL: USES (Uses)
(**lithog.** chemical amplified pos. **photoresists** containing polymethylhydroxystyrene and, for excimer laser exposures)

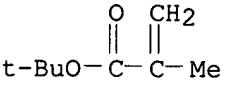
IT 72145-62-1, tert-Butyl methacrylate-methacrylic acid-methyl methacrylate copolymer
RL: USES (Uses)
(**lithog.** chemical amplified pos. photoresists containing, for excimer laser exposures)

IT **35343-63-6**, tert-Butyl methacrylate-methacrylic acid copolymer
RL: USES (Uses)
(**lithog.** chemical amplified pos. **photoresists** containing polymethylhydroxystyrene and, for excimer laser exposures)

RN 35343-63-6 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

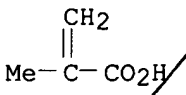
CM 1

CRN 585-07-9
CMF C8 H14 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2

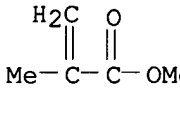


L59 ANSWER 18 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1994:148672 HCAPLUS
DN 120:148672
TI Two methods of experimental evaluation of long-range proximity function components in electron-beam lithography
AU Bogdanov, Alexei L.; Polyakov, Andrei
CS Dep. Phys., Chalmers Univ. Technol., Goeteborg, S-41296, Swed.
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1993), 11(6), 2758-61
CODEN: JVTBD9; ISSN: 0734-211X
DT Journal
LA English
AB Long range components of a proximity function in electron-beam lithog. are of great importance when high accelerating voltage (V.apprx.50 kV or higher) is used. An addnl. exposure, provided by long-range backscattered electrons, can strongly affect linewidth in a **nanometer** scale lithog. Proximity correction procedures require proximity functions in an anal. or tabular form. The proximity function can be estimated with a certain degree of accuracy using a Monte Carlo simulation of electron scattering in a given set of layers and materials. In the present work, two rather inexpensive and fast methods of exptl. long-range proximity function evaluation are suggested. Comparison of their output and Monte Carlo data produced using standard scattering calcn. algorithms has been made. Results obtained show that these methods can be useful for rapid and almost effortless exptl. proximity function determination First of the reported methods makes it possible to obtain quant. data on the backscattered exposure that is especially useful for the Monte Carlo algorithms verification.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST proximity effect electron beam lithog
IT Algorithm
(for electron scattering in electron-beam lithog., long-range proximity function components in)
IT Proximity effect
(in electron-beam lithog., exptl. evaluation of)
IT Simulation and Modeling, physicochemical
(Monte Carlo, of electron scattering in electron-beam lithog., long-range proximity function components in)
IT Lithography
(electron-beam, exptl. evaluation of long-range proximity function components in)
IT 9011-14-7, PMMA **25086-15-1** 119574-53-7, SAL-601
RL: USES (Uses)
(electron-beam lithog. using **resist** of, exptl. evaluation of long-range proximity function components in)
IT **25086-15-1**
RL: USES (Uses)
(electron-beam lithog. using **resist** of, exptl. evaluation of long-range proximity function components in)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate

(9CI) (CA INDEX NAME)

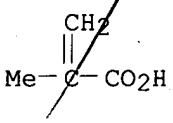
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2

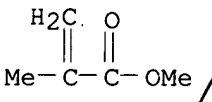


L59 ANSWER 19 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1994:148658 HCAPLUS
DN 120:148658
TI Fabrication limits of **nanometer** T and Γ gates: theory and experiment
AU Maile, B. E.
CS Res. Cent., Daimler Benz AG, Ulm, D-89013, Germany
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1993), 11(6), 2502-8
CODEN: JVTBD9; ISSN: 0734-211X
DT Journal
LA English
AB Theor. and exptl. investigations of methods to obtain T- and Γ-shaped sub-100 nm gates using electron-beam lithog., multilayer resist schemes and lift-off are reported. A resist profile simulation tool, based on Monte Carlo electron scattering calcn. and an adaptive string algorithm, is combined with an exptl. determined solubility database for various resist/developer pairs. This provides a very accurate description of the profile formation process for arbitrary resist/substrate stacks and excellent agreement between simulated and exptl. resist profiles is achieved. Limitations due to forward scattering and the influence of development conditions are discussed. Using optimized exposure and development parameters, sub-100 nm T and Γ gates with very low end-to-end resistances can be fabricated without sacrificing process latitudes.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 76
ST electron lithog multilayer resist gate electrode
IT Simulation and Modeling, physicochemical
(Monte Carlo, of electron scattering in electron-beam lithog. resist process, for gate electrodes fabrication)
IT Resists

(electron-beam, bilayer, in fabrication of gate electrodes, process limitations in)
IT Lithography
(electron-beam, fabrication of gate electrodes, process limitations in)
IT Transistors
(field-effect, gate electrodes in, electron-beam lithog. fabrication of **nanometer** T and Γ, process limitations in)
IT 67-63-0, Isopropyl alcohol, uses 108-10-1, Methyl isobutyl ketone
RL: USES (Uses)
(lithog. development of PMMA resist with solution containing, in electron-beam
lithog. fabrication of **nanometer** gate electrodes, process limits in)
IT 9011-14-7, PMMA **25086-15-1**, Poly(methacrylic acid-methyl methacrylate)
RL: USES (Uses)
(lithog. electron-beam bilayer **resist** system containing, in fabrication of gate electrodes, simulated and exptl. study for)
IT **25086-15-1**, Poly(methacrylic acid-methyl methacrylate)
RL: USES (Uses)
(lithog. electron-beam bilayer **resist** system containing, in fabrication of gate electrodes, simulated and exptl. study for)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

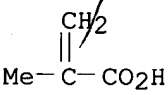
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2

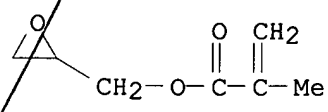


L59 ANSWER 20 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1994:19013 HCAPLUS
DN 120:19013
TI An aqueous-base developable photoresist based on light-induced cationic polymerization: resist performance of poly(glycidyl methacrylate-co-methacrylic acid)
AU Naitoh, Kazuhiko; Koseki, Kenichi; Yamaoka, Tsuguo
CS Fac. Eng., Chiba Univ., Chiba, 263, Japan
SO Journal of Applied Polymer Science (1993), 50(2), 243-50

CODEN: JAPNAB; ISSN: 0021-8995
DT Journal
LA English
AB An aqueous-base developable photoresist based on photoinduced cationic polymerization was prepared by copolymn. of glycidyl methacrylate (GMA) and methacrylic acid (MAA). The copolymer containing 83 mol % of GMA unit is soluble in an aqueous base and crosslinked in the presence of photogenerated acid caused by acid-initiated ring-opening polymerization of pendant epoxide groups. Exposure results in the generation of acid and the subsequent baking process promotes the diffusion of photogenerated acid, which initiates the cationic crosslinking of the epoxide rings. It was also found that the sensitivity of the copolymer was remarkably enhanced when a divinyl ether monomer is added as a bifunctional crosslinker. The sensitivity enhancement may be caused by the high reactivity of the divinyl ether monomer in the presence of acid. The resist comprised of the copolymer, the vinyl ether monomer, and diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate as photoacid generator exhibited the sensitivity of 20 mJ/cm2. A good pattern profile with high **resolution** was attained by exposure to a 365 nm light followed by a postexposure bake at 60° for 3 min.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST photoresist polyglycidyl methacrylate methacrylic acid
IT Resists
(photo-, neg.-working, based on poly(glycidyl methacrylate-methacrylic acid) and acid generator, **lithog.** performance of)
IT 52411-04-8 62613-15-4, Diphenyliodonium hexafluoroarsenate
121172-98-3, p-Nitrobenzyl-9,10-dimethoxyanthracene-2-sulfonate
131317-48-1, p-Nitrobenzyl 5-dimethylamino-1-naphthalenesulfonate
137308-86-2, Diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate
RL: USES (Uses)
(photoresist containing poly(glycidyl methacrylate-methacrylic acid) and, **lithog.** performance of)
IT **25584-67-2**
RL: USES (Uses)
(**photoresist** performance of)
IT **25584-67-2**
RL: USES (Uses)
(**photoresist** performance of)
RN 25584-67-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with oxiranylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

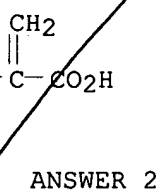
CM 1

CRN 106-91-2
CMF C7 H10 O3



CM 2

CRN 79-41-4
CMF C4 H6 O2

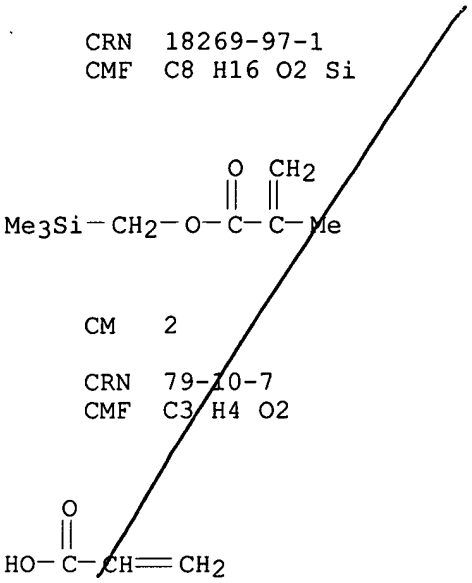


L59 ANSWER 21 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1993:549495 HCAPLUS
DN 119:149495
TI Negative-working photoresist composition
IN Kobayashi, Yoshihito; Niki, Hiroichi; Oonishi, Kyonobu
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 30 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 04340550	A2	19921126	JP 1991-112079	19910517
PRAI JP 1991-112079		19910517		

AB The title photoresist composition contains an alkali-soluble polymer and R2CR1R3C.tplbond.CC.tplbond.CR4R5R6 [R1-6 = H, aromatic hydrocarbon group, heterocyclyl, or carboarom. or carbocyclic group; R1 and R2 or R4 and R5 may form hydrocarbon or heterocyclic ring]. The composition shows high sensitivity to KrF excimer laser and can be used for high-**resoln**. patterning.
IC ICM G03F007-025
ICS G03F007-004; G03F007-023; G03F007-038; G03F007-075; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST photoresist compn neg working **lithog**
IT Semiconductor devices
(fabrication of, neg.-working photoresist compns. for)
IT Phenolic resins, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(novolak, photoresist compns. containing)
IT Resists
(photo-, neg.-working, high-sensitivity)
IT 3031-68-3, 2,4-Hexadiyne-1,6-diol 23487-69-6 24979-70-2, Poly(p-vinylphenol) 24996-66-5 27029-76-1, m-Cresol-p-cresol-formaldehyde copolymer 32527-15-4 119588-34-0 120551-36-2 135831-10-6 149873-02-9 149873-03-0 149873-04-1 149873-05-2 149873-06-3 149873-07-4 149873-08-5 149873-09-6 149873-10-9 149873-11-0 149873-12-1 149873-13-2 149972-27-0 **149972-28-1**
RL: TEM (Technical or engineered material use); USES (Uses)
(**photoresist** composition containing)
IT **149972-28-1**
RL: TEM (Technical or engineered material use); USES (Uses)
(**photoresist** composition containing)
RN 149972-28-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, (trimethylsilyl)methyl ester, polymer with 2-propenoic acid (9CI) (CA INDEX NAME)

CM 1



L59 ANSWER 22 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1993:135993 HCAPLUS
DN 118:135993
TI Submicron modulation-doped field-effect transistor/metal-semiconductor-metal-based optoelectronic integrated circuit receiver fabricated by direct-write electron-beam **lithography**
AU Ketterson, A.; Tong, M.; Seo, J. W.; Nummila, K.; Cheng, K. Y.; Morikuni, J.; Kang, S.; Adesida, I.
CS Cent. Compd. Semicond. Microelectron., Univ. Illinois, Urbana, IL, 61801, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1992), 10(6), 2936-40
CODEN: JVTBD9; ISSN: 0734-211X
DT Journal
LA English
AB An all direct-write electron-beam fabrication process was developed for the fabrication of monolithic optoelectronic integrated circuits (OEICs). Various electron-beam resist technologies are studied including image reversed, bilayer, and trilayer systems.. A novel single-step air-bridge formation process using selective development is described. These processes are demonstrated in the fabrication of a 0.85-μm sensitive OEIC receiver comprised of a metal-semiconductor-metal (MSM) detector integrated with a submicron GaAs/InGaAs/AlGaAs pseudomorphic modulation-doped field-effect transistor based transimpedance amplifier. A 3-dB transimpedance bandwidth of 5.6 GHz and a transimpedance bandwidth product of 4.8 THz Ω are measured for the amplifier. Discrete high-**resolution** MSM photodetectors with finger/gap spacings of 0.1-1.0 μm were fabricated and characterized.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 76
ST electron beam **lithog** optoelectronic integrated circuit; submicron modulation doped field effect transistor; metal semiconductor metal optoelectronic integrated circuit; direct write electron beam **lithog** photodetector
IT **Lithography**

(electron-beam, in fabrication of metal-semiconductor-metal-based optoelectronic integrated circuit receiver)

IT Transistors
(field-effect, submicron modulation-doped, in optoelectronic integrated circuit receiver, metal-semiconductor-metal-based)

IT Electric circuits
(optoelectronic, integrated, metal-semiconductor-metal-based, fabricated by direct-write electron-beam **lithog.**)

IT 9011-14-7, PMMA **25086-15-1** 104137-08-8, AZ5214
RL: USES (Uses)
(electron-beam **resist**, optoelectronic integrated circuit receiver fabricated by direct-write electron-beam **lithog.** using)

IT 7440-32-6, Titanium, uses 7440-57-5, Gold, uses
RL: USES (Uses)
(fabrication of optoelectronic integrated circuit receiver with grating from)

IT 106389-99-5, Gallium indium arsenide (Ga0.85In0.15As) 106495-75-4, Aluminum gallium arsenide (Al0.23Ga0.77As)
RL: USES (Uses)
(optoelectronic integrated circuit receiver fabricated on epitaxially grown layer of)

IT 1303-00-0, Gallium arsenide, properties
RL: PRP (Properties)
(optoelectronic integrated circuit receiver fabricated on epitaxially grown layer of)

IT 7440-21-3, Silicon, uses
RL: USES (Uses)
(optoelectronic integrated circuit receiver fabricated on epitaxially grown layer of aluminum gallium arsenide doped with)

IT 12033-89-5, Silicon nitride, properties
RL: PRP (Properties)
(optoelectronic integrated circuit receiver fabrication in relation to)

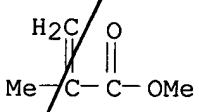
IT 64-17-5, Ethanol, uses 67-63-0, Isopropyl alcohol, uses 108-10-1, Methyl isobutyl ketone 1330-20-7, Xylene, uses 146479-40-5, AZ 327
RL: USES (Uses)
(resist developer, optoelectronic integrated circuit receiver fabricated by direct-write electron-beam **lithog.** using)

IT **25086-15-1**
RL: USES (Uses)
(electron-beam **resist**, optoelectronic integrated circuit receiver fabricated by direct-write electron-beam **lithog.** using)

RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

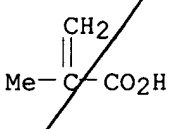
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 23 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1993:112774 HCAPLUS
DN 118:112774
TI Fabrication of lateral superlattices using multilayer resist techniques
AU Chang, H.; Nummila, K.; Grundbacher, R.; Adesida, I.; Leburton, J. P.; Hess, K.
CS Cent. Compd. Semicond. Microelectron., Univ. Illinois, Urbana, IL, 61801, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1992), 10(6), 2900-3
CODEN: JVTBD9; ISSN: 0734-211X
DT Journal
LA English
AB A procedure using multilayer resist systems was developed for the fabrication of artificial lateral surface superlattices (LSSLs) and other structures involving multiple point contacts and split gates. Two electron beam exposures are performed with the 1st exposure properly adjusted to result in a development down to the surface of the bottom resist layer with suitable undercut profile in the top resist layers. Electron beam exposure of arbitrary geometries at high **resolution** is then performed on the bottom layer through the opening in the top layers. After metal lift-off, all these geometries are connected together via an air-bridge network. The fabrication of field-effect devices with split gates and LSSL gates in GaAs/AlGaAs modulation-doped heterolayers are demonstrated. These devices exhibit quantum conductance at 1.8 K.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 76
ST lateral superlattice aluminum gallium arsenide heterojunction; multilayer resist electron beam **lithog** superlattice
IT **Lithography**
(electron-beam, fabrication of lateral superlattices using multilayer techniques in)
IT Resists
(electron-beam, multilayer, fabrication of lateral superlattices using)
IT Semiconductor devices
(field-effect, fabrication of, in gallium arsenide/aluminum gallium arsenide modulation-doped heterolayers)
IT Surface structure
(superstructure, lateral, fabrication of, using multilayer resist techniques)
IT 1303-00-0, Gallium arsenide, uses 37382-15-3, Aluminum gallium arsenide ((Al,Ga)As)
RL: USES (Uses)
(fabrication of field-effect devices in heterolayers containing, trilayer resist system for)
IT 9011-14-7, PMMA **25086-15-1**

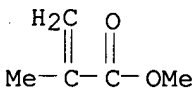
RL: USES (Uses)
(trilayer **resist** system containing, for fabrication of field-effect devices)

IT **25086-15-1**
RL: USES (Uses)
(trilayer **resist** system containing, for fabrication of field-effect devices)

RN 25086-1-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

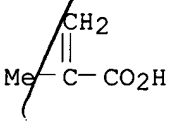
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

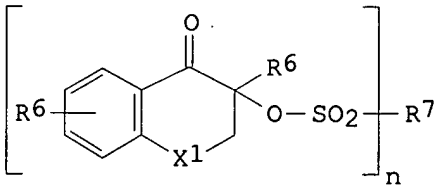
CRN 79-41-4
CMF C4 H6 O2



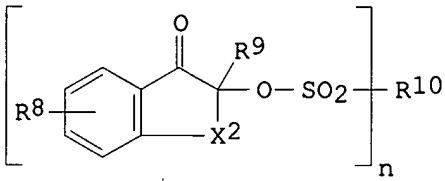
L59 ANSWER 24 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1992:601937 HCAPLUS
DN 117:201937
TI photosensitive composition for high **resolution lithography**
IN Kobayashi, Yoshihito; Niki, Hiroichi; Onishi, Kiyonobu
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 36 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 03289659	A2	19911219	JP 1990-285776	19901025
PRAI JP 1990-76601	A1	19900328		

GI



I



II

AB The title photosensitive composition comprises an alkali soluble polymer, an organic dissoln. suppressing agent containing a substituent decomposable by an acid, and a photoacid generator selected from [R1C(O)CR2R3OSO2]nR4, I, II, and [R11C(O)CR12R13CR14HOSO]nR4 [R1-3, R5,6, R8,9, R11-14 = H, halo, CN, silyl, monovalent organic group; R4, R7, R10, R15 = organic group; n = 1-7; X1,2 = O, S, CO, SO2, CR1R2, NCOR3].

IC ICM G03F007-075
ICS G03F007-004; G03F007-039; H01L021-027

CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)

ST photolithog photosensitive compn photoresist

IT Siloxanes and Silicones, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(photoresist composition containing)

IT Resists
(photo-, composition, for high **resolution** patterning)

IT **Lithography**
(photo-, photoresist compn for)

IT 117458-06-7 138888-97-8 139054-53-8 142952-62-3 143897-55-6
143897-56-7 143897-57-8 143897-58-9 143897-59-0 143897-60-3
143897-61-4 143897-62-5 143897-63-6 143897-64-7 143897-65-8
143897-66-9 143897-67-0 143897-68-1 143987-46-6 143987-47-7
RL: USES (Uses)
(dissoln. suppressing agent, photoresist composition containing)

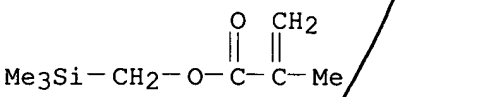
IT 4298-69-5 9010-92-8 19255-01-7 24979-70-2, Poly(p-vinylphenol)
25053-88-7, p-Cresol-formaldehyde copolymer 25085-34-1 25086-36-6, m-Cresol-formaldehyde copolymer 41996-76-3 51256-40-7 82540-07-6
87456-51-7 87456-53-9 87456-54-0 87456-61-9 **102868-49-5**
119588-34-0 143897-22-7 143897-23-8 143897-24-9 143897-25-0
143897-26-1 143897-27-2 143897-28-3 143897-29-4 143897-30-7
143897-31-8 143897-32-9 143897-33-0 143897-34-1 143897-35-2
143897-36-3 143897-37-4 143897-38-5 143897-39-6 143897-40-9
143897-41-0 143897-42-1 143897-43-2 143897-44-3 143897-45-4
143897-46-5 143897-47-6 143897-48-7 143897-49-8 143897-50-1
143897-51-2 143897-52-3 143897-53-4 143897-54-5 143908-37-6
143987-45-5 144025-37-6
RL: TEM (Technical or engineered material use); USES (Uses)
(**photoresist** composition containing)

IT **102868-49-5 143987-45-5**

RL: TEM (Technical or engineered material use); USES (Uses)
(**photoresist** composition containing)
RN 102868-49-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with (trimethylsilyl)methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

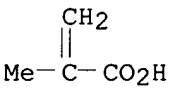
CM 1

CRN 18269-97-1
CMF C8 H16 O2 Si



CM 2

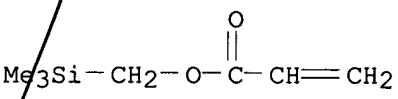
CRN 79-41-4
CMF C4 H6 O2



RN 143987-45-5 HCAPLUS
CN 2-Propenoic acid, polymer with (trimethylsilyl)methyl 2-propenoate (9CI) (CA INDEX NAME)

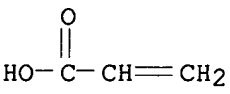
CM 1

CRN 67186-35-0
CMF C7 H14 O2 Si



CM 2

CRN 79-10-7
CMF C3 H4 O2

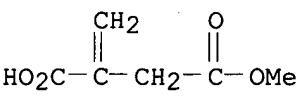


L59 ANSWER 25 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1992:436362 HCAPLUS

DN 117:36362
TI New thermally crosslinkable electron beam resists. 2. Monomethyl itaconate-methyl methacrylate copolymers
AU Miles, A. F.; Cowie, J. M. G.; Bennett, R. H.; Brambley, D. R.
CS Dep. Chem., Heriot-Watt Univ., Edinburgh, EH14 4AS, UK
SO Polymer (1992), 33(9), 1932-6
CODEN: POLMAG; ISSN: 0032-3861
DT Journal
LA English
AB The **lithog.** evaluation of monomethyl itaconate (MMI) and Me methacrylate copolymers as thermally crosslinkable electron beam resists is described. Their properties were investigated as a function of copolymer composition and primary molar mass to determine an optimum formulation for the preparation of high **resolution** resist patterns. Line and space test patterns with features <0.5 μm were prepared using copolymers containing 10 mol% MMI with **lithog.** sensitivity of .apprx.80 μC-cm-2 and resist contrast of .apprx.4 cm2-μC-1 when developed in a mixture of n-Bu acetate and n-hexyl acetate. In accordance with previously published results, the electron exposure dose required to first destroy the pre-crosslinked fraction of the resist was very much less than the electron exposure dose required for the preparation of high **resolution** resist patterns. The obtained results are compared to a theory of gel degradation originally developed to describe the solubilization of lignin from plant tissue, whereby the breakdown of the gel can be modeled using the statistics for random network formation, except applied in reverse.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST thermal crosslink electron beam resist **lithog;** methyl itaconate methyl methacrylate copolymer resist
IT Resists
(electron-beam, thermally crosslinkable, monomethyl itaconate-Me methacrylate copolymers as)
IT **37871-58-2,** Monomethyl itaconate-methyl methacrylate copolymer
RL: USES (Uses)
(**lithog.** thermally crosslinkable electron beam **resists** from)
IT **37871-58-2,** Monomethyl itaconate-methyl methacrylate copolymer
RL: USES (Uses)
(**lithog.** thermally crosslinkable electron beam **resists** from)
RN 37871-58-2 HCAPLUS
CN Butanedioic acid, methylene-, 4-methyl ester, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

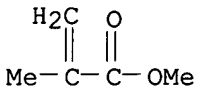
CM 1

CRN 7338-27-4
CMF C6 H8 O4



CM 2

CRN 80-62-6
CMF C5 H8 O2



L59 ANSWER 26 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1992:95477 HCAPLUS
DN 116:95477
TI A positive, chemically amplified, aromatic methacrylate resist employing the tetrahydropyranyl protecting group
AU Taylor, Gary N.; Stillwagon, Larry E.; Houlihan, Francis M.; Wolf, Thomas M.; Sogah, Dotsevi Y.; Hertler, Walter R.
CS AT and T Bell Lab., Murray Hill, NJ, 07974, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1991), 9(6), 3348-56
CODEN: JVTBD9; ISSN: 0734-211X
DT Journal
LA English
AB The synthesis, properties, and **lithog.** behavior are described of a new class of chemical-amplified, pos.-tone, aromatic methacrylate resists incorporating the tetrahydropyranyl protecting group bound to base-solubilizing carboxylic acid moieties. Copolymers containing equimolar amts. of benzyl methacrylate and tetrahydropyranyl methacrylate were prepared by free radical and group transfer polymerization (GTP). Photogenerated sulfonic acids formed from covalent ester or ionic salt precursors were used to remove the acid labile tetrahydropyranyl (THP) group by heating after exposure. The resulting copolymers of benzyl methacrylate (BMA) and methacrylic acid (MAA) are extremely soluble in aqueous base solns. when the MAA concentration exceeds 38 mol%, thus affording pos. tone patterns. These copolymer resists have high sensitivity (<30 mJ/cm2) when formulated with aromatic sulfonate or trifluoromethyl sulfonate sensitizers. Contrast is >2 and submicrometer patterns in 1 μm thick films are **resolved.** **Resolution** is significantly influenced by the sensitizer, post exposure heating and development conditions. Mol. weight distribution have little effect on the **lithog.** properties. **Resolution** presently is limited by resist adhesion which remains to be optimized. Plasma etching resistance to conditions used to etch Al is 1.8 times less than for hard-baked HPR-206 photoresist, but can be improved to a value of 1.5 by postexposure thermolysis. Improvements are needed before this type of chemical-amplified resist is able to meet all deep-UV **lithog.** requirements. However, it appears quite promising for other lower **resolution** (»1 μm), thick-film-imaging applications.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST chem amplified arom methacrylate resist; photoresist arom methacrylate deep UV **lithog;** photolithog deep UV resist tetrahydropyranyl protection
IT Resists
(photo-, pos.-working, chemical amplified, aromatic methacrylates as, with tetrahydropyranyl protecting group)
IT 75-75-2, Methane sulfonic acid 85-47-2, 1-Naphthalene sulfonic acid 98-11-3, Benzene sulfonic acid, properties 104-15-4, p-Toluene sulfonic

acid, properties 110-16-7, Maleic acid, properties 120-18-3, 2-Naphthalene sulfonic acid 144-62-7, Oxalic acid, properties 1493-13-6, Trifluoromethanesulfonic acid
RL: USES (Uses)
(design and selection of photoacid generator for photoresist formulation using model compound of)

IT 6293-66-9, Diphenyliodonium tosylate 66003-76-7 66003-78-9 114719-51-6 123658-14-0 136750-69-1
RL: USES (Uses)
(photoacid generator, **lithog.** performance of poly(benzyl methacrylate-tetrahydropyranyloxy methacrylate) affected by)

IT 75-59-2, Tetramethylammonium hydroxide
RL: USES (Uses)
(photoresist developer solution containing, development and **lithog.** performance of pos. chemical amplified resist in)

IT 110-91-8, Morpholine, uses
RL: USES (Uses)
(photoresist developer solution containing, development of pos. chemical amplified aromatic methacrylate resist in)

IT **65697-21-4**, Poly(benzyl methacrylate-methacrylic acid) 119359-85-2, Poly(benzyl methacrylate-tetrahydropyranyl methacrylate)
RL: USES (Uses)
(**photoresist** from, deep-UV **lithog.** performance of)

IT 84420-14-4, HPR 206
RL: RCT (Reactant); RACT (Reactant or reagent)
(plasma etching of, for comparison with pos. chemical amplified aromatic methacrylate resist)

IT 25085-83-0, Poly(benzylmethacrylate)
RL: RCT (Reactant); RACT (Reactant or reagent)
(plasma etching of, in comparison with copolymer containing tetrahydropyranyl methacrylate and)

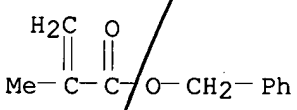
IT **65697-21-4**, Poly(benzyl methacrylate-methacrylic acid)
RL: USES (Uses)
(**photoresist** from, deep-UV **lithog.** performance of)

RN 65697-21-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with phenylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

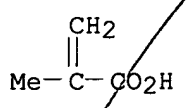
CM 1

CRN 2495-37-6
CMF C11 H12 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2

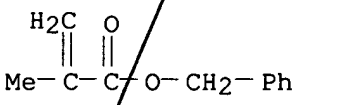


L59 ANSWER 27 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1991:643752 HCAPLUS
DN 115:243752
TI Positive, chemically-amplified aromatic methacrylate resist employing the tetrahydropyranyl protecting group
AU Taylor, Gary N.; Stillwagon, Larry E.; Houlihan, Francis M.; Wolf, Thomas M.; Sogah, Dotsevi Y.; Hertler, Walter R.
CS AT and T Bell Lab., Murray Hill, NJ, 07974, USA
SO Chemistry of Materials (1991), 3(6), 1031-40
CODEN: CMATEX; ISSN: 0897-4756
DT Journal
LA English
AB The synthesis, properties and **lithog.** behavior of a new class of chemical amplified, pos.-tone, aromatic methacrylate resists incorporating the tetrahydropyranyl protecting group bound to base-solubilizing carboxylic acid moieties are described. Copolymers containing equimolar amts. of benzyl methacrylate and tetrahydropyranyl methacrylate were prepared by free-radical and group-transfer polymerization (GTP). Photogenerated sulfonic acids formed from covalent ester or ionic salt precursors were used to remove the acid-labile tetrahydropyranyl (THP) group by heating after exposure. The resulting copolymers of benzyl methacrylate (BMA) and methacrylic acid (MAA) are extremely soluble in aqueous base solns. when the MAA concentration exceeds 38 mol %, thus affording pos. tone patterns. This class of resins has low absorbance at 248 nm needed for patterning ≥1-μm-thick films. The moderate THP group concentration and its relatively small size minimize shrinkage during thermal and plasma processing. The nearly monodisperse polymers formed by GTP offer the advantages of better mol. weight control and the opportunity to study the effect of mol. weight distribution on this class of resists. These copolymer resists have high sensitivity (<30 mJ/cm2) when formulated with aromatic sulfonate or trifluoromethyl sulfonate sensitizers. Contrast is >2 and submicrometer patterns in 1-μm-thick films are **resolved.** **Resolution** is significantly influenced by the sensitizer, postexposure heating, and development conditions. **Resolution** presently is limited by resist adhesion which remains to be optimized. Plasma etching resistance to conditions used to etch Al is 1.8 times less than for hard-baked HPR-206 photoresist but can be improved to a value of 1.5 by postexposure thermolysis. Improvements are needed before this type of chemical amplified resist is able to meet all deep-UV **lithog.** requirements.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST benzyl hydropyranyl methacrylate polymer resist submicron; chem amplified photoresist polymer submicron
IT Resists
(photo-, polymeric, benzyl methacrylate-tetrahydropyranyl methacrylate polymer for chemical amplified)
IT 114719-51-6, 2,6-Dinitrobenzyl tosylate 123658-14-0
RL: USES (Uses)
(chemical amplified resist system containing aromatic methacrylate copolymer and)

IT 57835-99-1 57900-42-2
RL: USES (Uses)
(chemical amplified resist system containing benzyl methacrylate-tetrahydropyranyl methacrylate polymer and)
IT 75-59-2, Tetramethylammonium hydroxide 110-91-8, Morpholine, uses and miscellaneous
RL: USES (Uses)
(developer, in processing of chemical amplified aromatic methacrylate polymeric resist)
IT **65697-21-4P**, Benzyl methacrylate-methacrylic acid polymer
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in processed chemical amplified benzyl methacrylate-tetrahydropyranyl methacrylate polymer **resist** system)
IT 1493-13-6, Triflic acid
RL: USES (Uses)
(in testing of benzyl methacrylate-tetrahydropyranyl methacrylate copolymer resist system)
IT 119359-85-2P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and use of, in chemical amplified resist systems)
IT 52858-59-0P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and use of, in formation of copolymer for chemical amplified resist system)
IT 136750-63-5P 136750-69-1P
RL: PREP (Preparation)
(preparation of, for chemical amplified resist system containing aromatic methacrylate copolymer)
IT 136750-62-4P
RL: PREP (Preparation)
(preparation of, for chemical amplified resist system study)
IT 106342-09-0P 136750-61-3P 136750-68-0P
RL: PREP (Preparation)
(preparation of, for formation of copolymer for chemical amplified resist system)
IT 51012-12-5 85248-36-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, in preparation of copolymer for chemical amplified resist system)
IT **65697-21-4P**, Benzyl methacrylate-methacrylic acid polymer
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in processed chemical amplified benzyl methacrylate-tetrahydropyranyl methacrylate polymer **resist** system)
RN 65697-21-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with phenylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

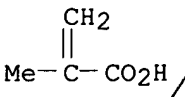
CM 1

CRN 2495-37-6
CMF C11 H12 O2



CM 2

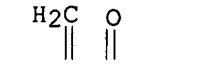
CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 28 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1991:594018 HCAPLUS
DN 115:194018
TI Fine undercut control in bilayer poly(methyl methacrylate)-poly(methyl methacrylate-methacrylic acid) resist system for E-beam **lithography** with submicrometer **resolution**
AU Bogdanov, A. L.; Andersson, Eva Karin
CS Dep. Phys., Chalmers Univ. Technol., Goeteborg, S-412, Swed.
SO Proceedings of SPIE-The International Society for Optical Engineering (1991), 1465(Electron-Beam, X-Ray, Ion-Beam Submicrometer Lithogr. Manuf.), 324-9
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English
AB An exposure scheme is proposed which makes it possible to control the amount of sidewall development of the copolymer layer in the title PMMA-P(MMA-MAA) E-beam resist system for the submicrometer lift-off process. Control was provided by dose variation. The monitor pattern for on line testing of lift-off resist systems during development was designed and proved to be practicable. Using the methods patterns <70 nm were fabricated by the lift-off process.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST submicron bilayer methacrylate polymer electron resist
IT Resists
(electron-beam, bilayer PMMA-poly(Me methacrylate-methacrylic acid), with fine undercut control for submicron **lithog.**)
IT 9011-14-7, PMMA **25086-15-1**, Methacrylic acid-methylmethacrylate polymer
RL: USES (Uses)
(in bilayer electron beam **resist** system for submicron **lithog.**, with fine undercut control)
IT **25086-15-1**, Methacrylic acid-methylmethacrylate polymer
RL: USES (Uses)
(in bilayer electron beam **resist** system for submicron **lithog.**, with fine undercut control)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

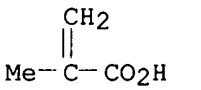
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

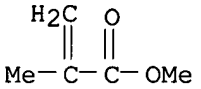
CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 29 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1991:174810 HCAPLUS
DN 114:174810
TI **Nanosecond** exposure processes of x-ray resists
AU Kukharenko, Yu. A.; Leonov, Yu. S.
CS USSR
SO Mikroelektronika (1990), 19(6), 555-63
CODEN: MKETA9; ISSN: 0544-1269
DT Journal
LA Russian
AB Masks from Au or Si-polyimide membranes were used with a plasma x-ray source to expose resists for periods of **nanoseconds**. The plasma source gives high resolution A model is given for x-ray absorption by Me resists.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST x ray resist exposure model; silicon polyimide membrane gold mask exposure
IT Polyamides, uses and miscellaneous
RL: USES (Uses)
(**nanosecond** exposure processes of x-ray resists using mask with layer of)
IT Resists
(x-ray, poly(Me methacrylate-methacrylic acid), **nanosecond** exposure processes of)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate polymer
RL: USES (Uses)
(**nanosecond** exposure processes of x-ray **resists** of)
IT 7440-21-3, Silicon, properties
RL: PRP (Properties)
(**nanosecond** exposure processes of x-ray resists using mask with layer of)
IT 7440-57-5, Gold, properties
RL: PRP (Properties)
(**nanosecond** exposure processes of x-ray resists using mask with pattern of)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate polymer
RL: USES (Uses)
(**nanosecond** exposure processes of x-ray **resists** of)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

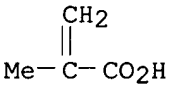
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2

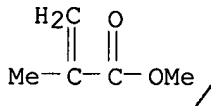


L59 ANSWER 30 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1990:641300 HCAPLUS
DN 113:241300
TI Resist materials based on methacrylic acid methyl ester-methacrylic acid copolymers for use in high-**resolution lithography**
AU Pfeiffer, K.; Kudryashov, V. A.; Lorkowski, H. J.
CS Zentralinst. Org. Chem., Akad. Wiss. DDR, Berlin, DDR-1199, Ger. Dem. Rep.
SO Journal of Information Recording Materials (1990), 18(3), 211-17
CODEN: JIRMEA; ISSN: 0863-0453
DT Journal
LA German
AB The structural modification of copolymers from Me methacrylate and methacrylic acid by thermal treatment in the temperature range of 140-200° leads to a change of the radiation sensitivity and solubility This dependence can be used to produce vertical, undercut structure profiles in electron beam and x-ray **lithog.**
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST resist methyl methacrylate methacrylic acid polymer; electron resist methacrylate polymer; x ray resist methacrylate polymer
IT Resists
(electron-beam, polymers from Me methacrylate and methacrylic acid, thermal treatment for improved sensitivity and solubility of)
IT Resists
(x-ray, polymers from Me methacrylate and methacrylic acid, thermal treatment for improved sensitivity and solubility of)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate polymer
RL: USES (Uses)
(electron-beam and x-ray **resists** from, thermally treated for improved sensitivity and solubility)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate polymer
RL: USES (Uses)
(electron-beam and x-ray **resists** from, thermally treated for improved sensitivity and solubility)

RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

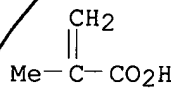
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2

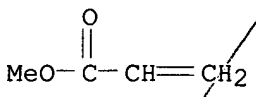


L59 ANSWER 31 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1990:488088 HCAPLUS
DN 113:88088
TI Multilayer resists with variable layer parameters for submicron **lithography**
AU Aristov, V. V.; Dmitriyeva, V. A.; Kudryashov, V. A.; Pfeiffer, K.; Lorkowski, H. J.
CS Inst. Microelectron. Technol. High Purity Mater., Chernogolovka, 142432, USSR
SO Microelectronic Engineering (1990), 11(1-4), 553-6
CODEN: MIENEF; ISSN: 0167-9317
DT Journal
LA English
AB The properties of Me acrylate-methacrylic acid copolymer used as a resist in submicron **lithog**. were investigated. Besides high sensitivity, contrast, and **resolution**, the resist exhibits nonmonotonic dependence of sensitivity on the prebake temperature This allows fabrication of multilayer resist films with different ratios of layer sensitivity and so permits control of resist structure profiles.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST submicron **lithog** multilayer resist x ray; methyl acrylate methacrylic acid polymer resist
IT Resists
(x-ray, polymeric, multilayer, for submicron **lithog**.)
IT 128715-93-5 128715-94-6
RL: USES (Uses)
(developer, for multilayer resist system for submicron **lithog**.)
IT **26589-39-9**
RL: USES (Uses)

(**lithog.** multilayer **resist** containing)
IT **26589-39-9**
RL: USES (Uses)
(**lithog.** multilayer **resist** containing)
RN 26589-39-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-propenoate (9CI) (CA INDEX NAME)

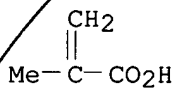
CM 1

CRN 96-33-3
CMF C4 H6 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 32 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1990:88314 HCAPLUS
DN 112:88314
TI Method for preparing contrast-enhancing layer for photoresist
IN Fanghaenel, Egon; Bauroth, Jan Uwe; Bauer, Joachim
PA Technische Hochschule "Carl Schorlemmer" Leuna-Merseburg, Ger. Dem. Rep.
SO Ger. (East), 4 pp.
CODEN: GEXXA8
DT Patent
LA German
FAN.CNT 1

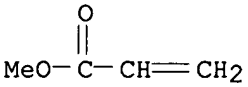
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DD 265008	A1	19890215	DD 1987-309315	19871123
PRAI	DD 1987-309315		19871123		

OS MARPAT 112:88314
AB Contrast-enhancing layers for use in improving the **resolution** and contrast of microstructures in the photolithog. production of microelectronic elements contain a trans-1H-aryl-3-heterocyclidinetriazenium salt. Thus, a semiconductor disk was coated with a photoresist layer (conventional novolak photoresist), a poly(vinyl alc.) interlayer, and a contrast-enhancing layer from 1-(p-tolyl)-3-[3-butylbenzthiazolinylidene-(2)]triazene, p-toluenesulfonic acid, amonically polymerized α-methylstyrene, and tetrachloroethane. After exposure the contrast enhancing layer was removed with tetrachloroethane, and the photoresist layer was developed with an aqueous solution to give a resist structure with improved **resolution**

IC ICM G03F007-26
ICS G03F007-08
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST photoresist contrast enhancing layer; photolithog contrast enhancing layer; arylheterocyclidenetriazenium salt photoresist contrast enhancement
IT Phenolic resins, uses and miscellaneous
Polyesters, uses and miscellaneous
RL: USES (Uses)
(photoresist contrast-enhancing layers containing trans-arylheterocyclidinetriazinium salt and)
IT Electronics
(micro-, devices, contrast-enhancing layer for photolithog. production of)
IT Resists
(photo-, contrast-enhancing layers containing trans-arylheterocyclidenetriazinium salt for)
IT **Lithography**
(photo-, contrast-enhancing layers for use in)
IT Siloxanes and Silicones, uses and miscellaneous
RL: USES (Uses)
(polyester-, aromatic, photoresist contrast-enhancing layers containing trans-arylheterocyclidinetriazinium salt and)
IT Polyesters, uses and miscellaneous
RL: USES (Uses)
(siloxane-, aromatic, photoresist contrast-enhancing layers containing trans-arylheterocyclidinetriazinium salt and)
IT 123772-33-8 123772-34-9
RL: USES (Uses)
(photoresist contrast-enhancing layer containing)
IT 97-05-2 104-15-4, p-Toluenesulfonic acid, properties 9003-39-8, Poly(vinylpyrrolidone) 25014-31-7, Poly(α-methylstyrene)
RL: USES (Uses)
(photoresist contrast-enhancing layer containing (tolyl)(butylbenzthiazolinylidene)triazine and)
IT 9002-86-2, Poly(vinyl chloride) 9002-89-5, Poly(vinyl alcohol) 9003-20-7, Poly(vinyl acetate) 9003-53-6, Polystyrene 9003-55-8, Butadiene-styrene copolymer 9004-34-6D, Cellulose, derivs. 9011-16-9 25119-62-4, Allyl alcohol-styrene copolymer **25302-81-2**, Acrylic acid-methyl acrylate copolymer
RL: USES (Uses)
(**photoresist** contrast-enhancing layers containing trans-arylheterocyclidinetriazinium salt and)
IT **25302-81-2**, Acrylic acid-methyl acrylate copolymer
RL: USES (Uses)
(**photoresist** contrast-enhancing layers containing trans-arylheterocyclidinetriazinium salt and)
RN 25302-81-2 HCAPLUS
CN 2-Propenoic acid, polymer with methyl 2-propenoate (9CI) (CA INDEX NAME)

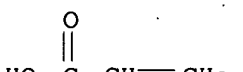
CM 1

CRN 96-33-3
CMF C4 H6 O2



CM 2

CRN 79-10-7
CMF C3 H4 O2



L59 ANSWER 33 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1989:644366 HCAPLUS
DN 111:244366
TI Photopolymerizable compositions for high-**resolution** **lithographic** plates
IN Kita, Nobuyuki; Koike, Mitsuru
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 01013141	A2	19890118	JP 1987-168191	19870706
PRAI JP 1987-168191		19870706		

AB The title compns. sensitive to Ar laser contain photopolymerizable monomer containing ≥1 ethylenic unsatn. and photopolymn. initiator comprising cationic organic dye compound organoboron compound anion salts and aromatic onium or halonium salts.
IC ICM G03C001-68
ICS C08F002-50
ICA G03C005-16
CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST cationic dye borate photosensitizer; halonium dye borate photosensitizer; photopolymerizable **lithog** plate
IT **Lithographic** plates
(photoresists, photosensitizers for)
IT Resists
(photo-, acrylic, photosensitizers for)
IT Polymerization catalysts
(photochem., cationic dye organoborate and onium compds. and halonium compds., for **lithog**. plates)
IT 24806-57-3 58109-40-3 117522-03-9 120307-08-6 123051-21-8 124086-15-3
RL: CAT (Catalyst use); USES (Uses)
(photopolymn. catalysts containing, for acrylic **lithog**. plates)
IT **90216-38-9**, Allyl methacrylate-methacrylic acid copolymer 110220-20-7
RL: USES (Uses)
(**photoresists** containing, for **lithog**. plates, photosensitizers for)
IT **90216-38-9**, Allyl methacrylate-methacrylic acid copolymer

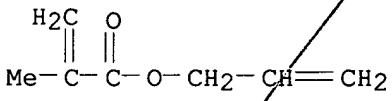
RL: USES (Uses)
(**photoresists** containing, for **lithog**. plates, photosensitizers for)

RN 90216-38-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with 2-propenyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

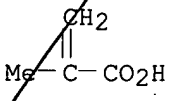
CM 1

CRN 96-05-9
CMF C7 H10 O2



CM 2

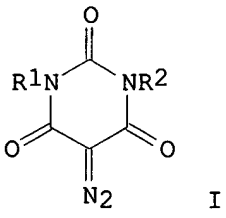
CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 34 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1989:240225 HCAPLUS
DN 110:240225
TI UV-sensitive, positive-working copying composition containing diazobarbituric acid derivative
IN Thurner, Joern Uwe; Ulbricht, Mathias; Brosche, Karola; Schirmer, Matthias; Tomaschewski, Georg
PA Humboldt-Universitaet zu Berlin, Ger. Dem. Rep.
SO Ger. (East), 11 pp.
CODEN: GEXXA8
DT Patent
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DD 261857	A1	19881109	DD 1985-280531	19850912
PRAI DD 1985-280531		19850912		

OS MARPAT 110:240225
GI



I

AB UV-sensitive, pos.-working copying compns. for **lithog.** and microlithog. applications, which give a high **resolution**, contain a binder with a suitable absorption window and/or improved UV transmittance in the mixture with the radiation-sensitive components, that absorb in the 200-320 nm region. The compns. consist of a mixture of a copolymer of an unsatd. carboxylic acid and its derivs. and/or a PhOH-HCHO resin and a 5-diazobarbituric acid (I; R1,R2 = H, alkyl, cycloalkyl, aryl, or substituted aryl) or a mixture of various I. A Si wafer was coated with a solution containing a PhOH-HCHO resin, 5-diazobarbituric acid, Et cellosolve, BuOAc, DMSO, and xylene to give a thin film, dried, imagewise exposed to a suitable original, and developed with aqueous NaOH give pos. relief with good image reproduction

IC ICM G03C001-52

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 28

ST pos photoresist diazobarbituric acid deriv

IT Phenolic resins, uses and miscellaneous
RL: USES (Uses)
(pos.-working photoresists containing diazobarbituric acid derivs. and, for high-**resolution** images)

IT Resists
(photo-, pos.-working, containing diazobarbituric acid derivs., for high-**resolution** images)

IT 9003-35-4, Phenol-formaldehyde copolymer **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: USES (Uses)
(pos.-working **photoresists** containing diazobarbituric acid derivs. and, for high-**resolution** images)

IT 31221-06-4, 5-Diazobarbituric acid 74808-90-5
RL: USES (Uses)
(pos.-working photoresists containing, for high-**resolution** images)

IT 116418-82-7P 117135-75-8P
RL: PREP (Preparation)
(preparation and pos.-working photoresists containing, for high-**resoln**. images)

IT 35824-91-0P, 1,3-Dicyclohexylbarbituric acid
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction of, with azidoethylbenzothiazolium tetrafluoroborate)

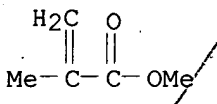
IT 7391-60-8, 1,3-Diphenylbarbituric acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with azidoethylbenzothiazolium tetrafluoroborate)

IT 722-75-8, 2-Azido-3-ethylbenzothiazolium tetrafluoroborate
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with barbituric acid derivs.)

IT 141-82-2, Malonic acid, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with dicyclohexylurea)
IT 2387-23-7, N,N'-Dicyclohexylurea
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with malonic acid)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: USES (Uses)
(pos.-working **photoresists** containing diazobarbituric acid derivs. and, for high-**resolution** images)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

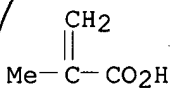
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 35 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1988:580229 HCAPLUS
DN 109:180229
TI High **resolution** trilayer electron beam resist system employing methyl methacrylate - methacrylic acid polymer and reliable reactive ion etch processes
AU Mele, Thomas C.; Perera, Asanga H.; Krusius, J. Peter
CS Sch. Electr. Eng., Cornell Univ., Ithaca, NY, 14853, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (1988), 923(Electron-Beam, X-Ray, Ion-Beam Technol.: Submicrometer Lithogr. 7), 217-23
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English
AB A high **resolution** trilayer resist system based on the copolymer e-beam resist poly(methyl methacrylate-methacrylic acid), SiO2 interlayer, and a polyimide base layer is described. High **resolution** reactive ion etch processes are developed that minimize base layer undercut and provide for cleanly patterned windows for 150 nm thick Al lift-off. Residue formation on the base layer sidewalls after reactive ion etching depends on the substrate film composition Linewidth variations as a function

of exposure dose, development time, and reactive ion etch conditions are discussed. The extent to which trilayer stencils can be used for high **resolution** reversal processes is limited by the polyimide thickness required for planarization and proximity effect reduction, Al film thickness required, and the min. line space desired.

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)

ST electron resist trilayer polymer **lithog**; methacrylic acid methyl methacrylate polymer resist

IT Polyimides, uses and miscellaneous
RL: USES (Uses)
(**lithog**. trilayer resist system containing)

IT Resists
(electron-beam, trilayer, containing methacrylic acid-Me methacrylate polymer and polyimide layers and silicon dioxide interlayer)

IT 117148-76-2, QZ 3289 117148-77-3, QZ 3290
RL: USES (Uses)
(adhesion promoter, for polyimides in trilayer electron beam resist system)

IT 7440-21-3, Silicon, uses and miscellaneous
RL: USES (Uses)
(**lithog**. imaging of, using trilayer electron beam resist system)

IT 7631-86-9, Silicon dioxide, uses and miscellaneous
RL: USES (Uses)
(**lithog**. imaging using trilayer electron beam resist system with interlayer of)

IT **25086-15-1**, Methacrylic acid-methyl methacrylate polymer
RL: USES (Uses)
(**lithog**. trilayer electron beam **resist** system containing layer of, with reliable reactive ion etch processes)

IT 101506-28-9, XU285 106442-39-1, XU284
RL: USES (Uses)
(trilayer electron beam resist system containing layer of)

IT 7429-90-5, Aluminum, properties
RL: PRP (Properties)
(trilayer electron beam resist system for lift-off of film of)

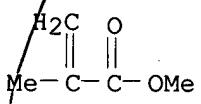
IT **25086-15-1**, Methacrylic acid-methyl methacrylate polymer
RL: USES (Uses)
(**lithog**. trilayer electron beam **resist** system containing layer of, with reliable reactive ion etch processes)

RN 25086-15-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

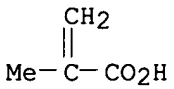
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

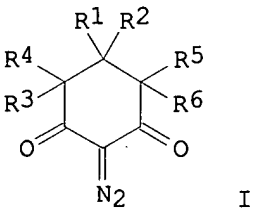
CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 36 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1988:177232 HCAPLUS
DN 108:177232
TI UV-sensitive positive-working copying composition II
IN Thurner, Joern Uwe; Hinzmann, Bernd; Tomaschewski, Georg; Schirmer, Matthias
PA Humboldt-Universitaet zu Berlin, Ger. Dem. Rep.
SO Ger. (East), 4 pp.
CODEN: GEXXA8
DT Patent
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DD 247759	A1	19870715	DD 1983-253234	19830720
PRAI DD 1983-253234		19830720		

GI



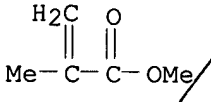
I

AB UV-sensitive, pos.-working copying compns. for **lithog.** and microlithog. that give high-**resolution** images are composed of a binder having an absorption window to provide improved UV transparency and a 6-membered alicyclic 2-diazo-1,3-diketone of the formula I (R1 = H, alkyl, aryl, or substituted aryl; R2 = H or alkyl; R3 = H, alkyl, aryl, substituted aryl, CN, or alkoxycarbonyl; R4 = H or alkoxycarbonyl; R5 = H or alkyl; R6 = H; and R1R2 can form an alkyl bridge or an alicyclic ring). Thus, a solution containing Alnovol PN 430 (PhOH-HCHO resin), 3,5-dioxo-4-diazo-1,1-dimethylcyclohexane, Et glycol acetate, BuOAc, and xylene was coated on a Si wafer, dried, imagewise-exposed, and developed in aqueous NaOH to give a detailed reproduction of the original in the form of a pos. relief.
IC G03C001-70; G03F007-08
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST pos working photosensitive compn **lithog**; microlithog pos working

photoresist; alicyclic diazodiketone pos photoresist
IT Phenolic resins, uses and miscellaneous
RL: USES (Uses)
(pos.-working photoresists containing alicyclic diazo diketones and)
IT Resists
(photo-, pos.-working, containing alicyclic diazo diketones)
IT 9003-35-4, Alnovol PN 430
RL: USES (Uses)
(pos.-working photoresists containing alicyclic diazo diketone and)
IT 57-55-6, uses and miscellaneous 109-99-9, Tetrahydrofuran, uses and miscellaneous 110-80-5, Ethyl cellosolve 123-86-4, Butyl acetate 123-91-1, Dioxane, uses and miscellaneous 1330-20-7, Xylene, uses and miscellaneous
RL: USES (Uses)
(pos.-working photoresists containing diazo diketone and)
IT **25086-15-1**
RL: USES (Uses)
(pos.-working **photoresists** containing dioxodiazocyclohexane and)
IT 1807-68-7, 3,5-Dioxo-4-diazo-1,1-dimethylcyclohexane
RL: USES (Uses)
(pos.-working photoresists containing phenolic resin and)
IT 1460-08-8, 1,3-Dioxo-2-diazocyclohexane
RL: USES (Uses)
(pos.-working resists containing polymer binder and)
IT **25086-15-1**
RL: USES (Uses)
(pos.-working **photoresists** containing dioxodiazocyclohexane and)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

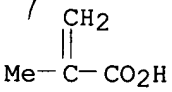
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2

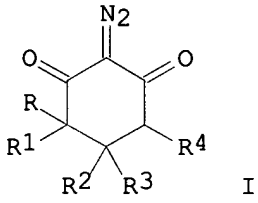


L59 ANSWER 37 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1987:506347 HCAPLUS
DN 107:106347
TI Deep ultra-violet **lithographic** resist composition

IN Schwartzkopf, George
PA Baker, J. T., Chemical Co., USA
SO Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 198674	A2	19861022	EP 1986-302677	19860410
	EP 198674	A3	19870902		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
	US 4624908	A	19861125	US 1985-723273	19850415
	JP 61240237	A2	19861025	JP 1986-85220	19860415
	JP 03006495	B4	19910130		
PRAI	US 1985-723273	A	19850415		

GI



I

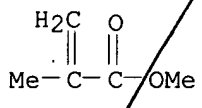
AB A deep-UV pos. photoresist is comprised of a base-soluble polymer and a photosolubilizing agent having the general formula I (R4 = H, C1-20 alkoxycarbonyl) and when R4 = C1-20 alkoxycarbonyl, R-R3 = H, C1-6 alkyl; when R, R2 = H, R1R3 together are C1-6 alkylene; when R, R1 = H, CR2R3 is C5-9 cycloalkyl; when CRR1 = C5-9 cycloalkyl, R2, R3 = H). The photoresist is sensitive to 240-300 nm UV radiation and provides high-**resolution** patterns. Decalin-1,3-dione was reacted with triethylamine and p-toluenesulfonyl azide in EtOH in an ice bath to give trans-2-diazodecalin-1,3-dione (II). A solution composed of II, methacrylic acid-Me methacrylate copolymer, and 2-ethoxyethanol was coated on a Si wafer, dried, exposed to the 240-300 nm radiation from a high-pressure Hg lamp, and developed with an aqueous triethanolamine solution to remove the photoresist layer from the exposed areas.

IC ICM G03F007-08
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST pos UV photoresist diazocyclohexanedione deriv; photosolubilizer diazocyclohexanedione deriv pos photoresist
IT Resists
(photo-, pos.-working, deep-UV, containing base-soluble resin and diazocyclohexanedione derivative)
IT 9003-35-4, Phenol-formaldehyde copolymer 9016-83-5 **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer 59269-51-1, Poly(vinylphenol)
RL: USES (Uses)
(pos.-working deep-UV **photoresist** from diazocyclohexanedione derivative and)
IT 7230-19-5 109970-15-2 109970-16-3 109970-18-5
RL: USES (Uses)
(pos.-working deep-UV photoresists from base-soluble resin and)

IT 941-55-9, p-Toluenesulfonyl azide
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with decalindiones)
IT 4029-25-8 68429-52-7, Decalin-1,3-dione 109970-17-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with toluenesulfonyl azide)
IT 96-48-0, γ-Butyrolactone 108-10-1, Methyl isobutyl ketone
110-49-6, 2-Methoxyethyl acetate 110-80-5, 2-Ethoxyethanol 111-96-6,
Diglyme
RL: USES (Uses)
(solvent, for deep-UV pos. photoresist composition containing
alkali-soluble resin
and diazocyclohexanedione derivs.)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: USES (Uses)
(pos.-working deep-UV **photoresist** from diazocyclohexanedione
derivative and)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate
(9CI) (CA INDEX NAME)

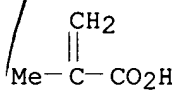
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

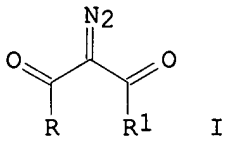
CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 38 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1987:224502 HCAPLUS
DN 106:224502
TI Deep ultraviolet **lithographic** resist composition
IN Gray, Gary M.
PA Baker, J. T., Chemical Co., USA
SO U.S., 4 pp. Cont.-in-part of U.S. Ser. No. 539,817 abandoned.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 4622283	A	19861111	US 1985-775222	19850912

PRAI US 1983-539817 A2 19831007
OS CASREACT 106:224502
GI



I

AB A pos.-working UV photoresist which is developable in an alkaline solution is comprised of an alkali-soluble polymer and a photosolubilizing agent having the formula I (R, R1 = alkyl, aryl, alkoxyalkyl, aralkyl, haloalkyl, RR1 combination representing alkylene). The UV photoresist provides good **resolution** of 0.75 μ and is especially suitable for **lithog.** A solution of methacrylic acid-Me methacrylate copolymer, 2-diazo-5,5-dimethylcyclohexane-1,3-dione, and 2-ethoxyethyl acetate was coated on a wafer, dried, exposed to deep UV radiation, and developed in an alkaline developer. The photoresist required only 1/2 of the exposure dose to clear the exposed areas as compared to a control using a diazo compound outside the scope of the invention.

IC ICM G03C001-54
ICS G03C001-60; G03F007-26
NCL 430191000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST pos UV photoresist diazodiketone **lithog**
IT Phenolic resins, uses and miscellaneous
RL: USES (Uses)
(alkali-soluble, pos.-working deep UV photoresist containing diazodiketone photosolubilizing agent and, for **lithog.**)
IT Resists
(photo-, UV, pos.-working, deep, containing alkali-soluble polymer and diazadiketone photosolubilizing agent for **lithog.**)
IT 13407-52-8
RL: USES (Uses)
(diazotization of diketone with, for **lithog.** resist composition)
IT 1807-68-7, 2-Diazo-5,5-dimethyl-1,3-cyclohexanedione
RL: USES (Uses)
(pos.-working deep UV photoresist containing alkali-soluble polymer and, for **lithog.**)
IT 9003-35-4, Formaldehyde-phenol copolymer 9016-83-5, Cresol-formaldehyde copolymer **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: USES (Uses)
(pos.-working deep UV **photoresist** containing diazodiketone photosolubilizing agent and, for **lithog.**)
IT 1460-08-8P 1807-68-7P 2009-96-3P 56540-48-8P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and use of, in deep UV **lithog.** resist composition)
IT 96-48-0, γ-Butyrolactone 108-10-1, Methyl isobutyl ketone 110-49-6, 2-Methoxyethyl acetate 110-80-5 111-96-6, Diglyme
RL: USES (Uses)
(solvent, for coatable photoresist containing alkali-soluble polymer and

diazodiketone photosolubilizing agent for **lithog.**)

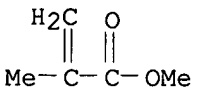
IT **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: USES (Uses)
(pos.-working deep UV **photoresist** containing diazodiketone photosolubilizing agent and, for **lithog.**)

RN 25086-15-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

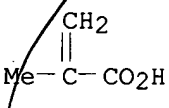
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 39 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1987:165987 HCAPLUS

DN 106:165987

TI Trimethylsilylmethylmethacrylate-methacrylic acid polymer/2-nitrobenzyl cholate: a two-level, solution-inhibition, deep-UV resist system

AU Reichmanis, E.; Smith, B. C.; Smolinsky, G.; Wilkins, C. W., Jr.

CS AT and T Bell Lab., Murray Hill, NJ, 07974, USA

SO Journal of the Electrochemical Society (1987), 134(3), 653-7
CODEN: JESOAN; ISSN: 0013-4651

DT Journal

LA English

AB Trimethylsilylmethyl methacrylate (SI) and methacrylic acid (MA) copolymerize with reactivity ratios of .apprx.1 to give a material that has adequate aqueous-base-solubility and O-RIE resistance to serve as the top component of a bilevel resist system. A resin with a SI:MA ratio of 1.1:1 etches between 1/10 and 1/20 slower than hard-baked HPR-204, depending on the O pressure in the reactor. Incorporation of 20 w/o dinitrobenzyl cholate to the resist layer, as a solution inhibitor results in a system capable of submicron **resolution** with a sensitivity of .apprx.0.2 J/cm2. O-RIE pattern transfer into thick planarizing HPR-204 was readily accomplished.

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)

ST trimethylsilylmethyl methacrylate methacrylic acid copolymer; **lithog** bilevel resist system

IT Resists

(photo-, deep-UV, 2-level, trimethylsilylmethyl methacrylate-methacrylic acid polymer/nitrobenzyl cholate system)

IT 111-42-2, Diethanolamine, uses and miscellaneous
RL: USES (Uses)
(developer composition containing sodium hydrogen carbonate and, for **lithog.** characteristics of trimethylsilylmethyl methacrylate-methacrylic acid resists)

IT 144-55-8, Sodium hydrogen carbonate, uses and miscellaneous
RL: USES (Uses)
(developer solution containing diethanolamine and, for characterization of trimethylsilylmethylmethacrylate-methacrylic acid polymer resists)

IT 80500-54-5, 2-Nitrobenzyl cholate 85777-23-7, 2,6-Dinitrobenzyl cholate
RL: USES (Uses)
(**lithog.** 2-level resist system containing trimethylsilylmethyl methacrylate-methacrylic acid polymer and)

IT 73928-57-1
RL: USES (Uses)
(**lithog.** 2-level solution-inhibitor deep-UV resist system with poly(trimethylsilylmethyl methacrylate-methacrylic acid) photoresist-nitrobenzyl cholate upper layer and lower layer from)

IT **102868-49-5**, Trimethylsilylmethyl methacrylate-methacrylic acid copolymer
RL: USES (Uses)
(**photoresist** from, containing nitrobenzyl cholate solution inhibitor, for 2-level deep-UV **resist** system **lithog**.)

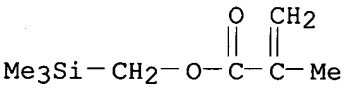
IT 7782-44-7, Oxygen, properties
RL: PRP (Properties)
(plasma, reactive ion etching resistant to, by trimethylsilylmethylmethacrylate-methacrylic acid photoresist system)

IT **102868-49-5**, Trimethylsilylmethyl methacrylate-methacrylic acid copolymer
RL: USES (Uses)
(**photoresist** from, containing nitrobenzyl cholate solution inhibitor, for 2-level deep-UV **resist** system **lithog**.)

RN 102868-49-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with (trimethylsilyl)methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

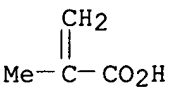
CM 1

CRN 18269-97-1
CMF C8 H16 O2 Si



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 40 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1987:129327 HCAPLUS
DN 106:129327
TI Photosensitive resin compositions
IN Araki, Yasuhiko; Matsuhi, Hajime; Danjo, Shigeru
PA Sekisui Chemical Co. Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 61188533	A2	19860822	JP 1985-30008	19850218
PRAI	JP 1985-30008		19850218		

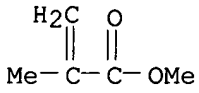
AB The claimed photosensitive resin compns. contain (1) a resin prepared from α,β-unsatd. ethylenic monomers, (2) α,β-unsatd. ethylenic photocrosslinking agents, (3) thioxanthone or its alkyl or halo derivative, (4) ≥1 compound of the formula p-R1NR2C6H4CO2R3 (R1, R2 = C1-3 alkyl; R3 = H, C≤18 alkyl), and (5) ≥1 2,4,5-triarylimidazolyl dimer. The photosensitive resin compns. show good sensitivity and good storage stability; hence they are useful as high-**resolution** photoresists for electroforming processes. Thus, poly(Me methacrylate), pentaerythritol triacrylate, tetraethylene glycol diacrylate, 2,4-diethylthioxanthone, isoamyl p-dimethylaminobenzoate, 2-(2-chlorophenyl)-4,5-bis(emthoxyphenyl)imidazole dimer, ethyl violet and p-methoxyphenol were mixed in MeCOEt to give a photoresist solution for electroplating resist pattern formation.

IC ICM G03C001-00
ICS C08F002-48; G03C001-68; G03F007-00
CC 74-4 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST photoresist compn acrylic resin; triphenylimidazole dimer photoresist compn; alkylaminobenzoate ester photoresist compn
IT Electrodeposition and Electroplating
(photoresists for pattern formation by)
IT Resists
(photo-, acrylic resin compns. containing alkyl aminobenzoate esters and triarylimidazole dimers as)
IT Electric circuits
(printed, photoresists for **lithog.** fabrication of)
IT 3524-68-3, Pentaerythritol triacrylate 9011-14-7, Poly(methyl methacrylate) 17831-71-9, Tetraethylene glycol diacrylate **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer 82799-44-8, 2,4-Diethylthioxanthone
RL: TEM (Technical or engineered material use); USES (Uses)
(**photoresist** compns. containing)
IT **25086-15-1**, Methacrylic acid-methyl methacrylate copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(**photoresist** compns. containing)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate

(9CI) (CA INDEX NAME)

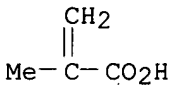
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

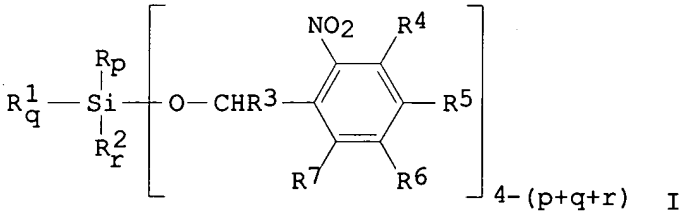
CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 41 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1986:99539 HCAPLUS
DN 104:99539
TI Positive resist materials
IN Isori, Kunihiro; Onishi, Yasunobu; Hayase, Shuji
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 60189741	A2	19850927	JP 1984-45510	19840312
PRAI JP 1984-45510		19840312		

GI



I

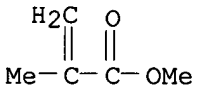
AB Pos.-resist materials contain Me methacrylate-methacrylic acid copolymer and an o-nitrobenzyloxysilane derivative I (R-R2 = H, halo, vinyl, allyl,

C1-10 alkyl, C1-10 alkoxy, aryl, aryloxy, siloxy; R3 = H, C1-10 alkyl, Ph, R4-R7 = H, NO2, CN, OH, mercapto, halo, acetyl, allyl, C1-5 alkyl, C1-5 alkoxy, aryl, aryloxy; p, q, r = integers on condition that 0 ≤ p, q, r ≤ 3, 1 ≤ p+q+r ≤ 3). The materials have good sensitivity to UV, especially in 200-300-nm range as well as to visible light and ionizing radiation, and good resistivity to dry-etching, and provide resist patterns having high **resolution** Thus, 200 g solution of 15% Me methacrylate-methacrylic acid 75:25 copolymer (mol. weight 70,000) in cyclopentanone was mixed with 6 g o-nitrobenzyloxytriphenylsilane. After purification by filtration using a 0.5-μm filter, the solution was spin-coated on a SiO2/Si wafer and dried at 140° for 20 min to give a 1.0-1.5 μm resist layer. The resist layer was imagewise exposed to 250-nm light and developed with a 10% NaHCO3 solution

IC ICM G03C001-72
ICS G03C005-08
ICA C08K005-54; C08L033-12
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST nitrobenzyloxysilane deriv pos resist **lithog**; photoresist nitrobenzyloxysilane acrylic polymer
IT Resists
(photo-, pos.-working, composition for, containing methacrylic acid-Me methacrylate copolymer and nitrobenzyloxysilane derivs.)
IT Resists
(pos.-working, composition for, containing methacrylic acid-Me methacrylate copolymer and nitrobenzyloxysilane derivs.)
IT 88216-15-3 97716-33-1 98064-93-8 100551-46-0
RL: USES (Uses)
(pos.-working resist composition containing Me methacrylate-methacrylic acid copolymer and)
IT **25086-15-1**
RL: USES (Uses)
(pos.-working **resist** composition containing nitrobenzyloxytriphenylsilane or its derivs. and)
IT **25086-15-1**
RL: USES (Uses)
(pos.-working **resist** composition containing nitrobenzyloxytriphenylsilane or its derivs. and)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

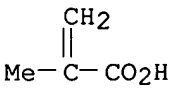
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

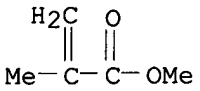
CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 42 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1986:99369 HCAPLUS
DN 104:99369
TI A small scale Z-pinch device as an intense soft x-ray source
AU Weinberg, Irving N.; Fisher, Amnon
CS Dep. Phys., Univ. California, Irvine, CA, 92717, USA
SO Nuclear Instruments & Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment (1986), A242(3), 535-8
CODEN: NIMAER; ISSN: 0168-9002
DT Journal
LA English
AB A small scale (400 J) device to study the application of radiation emitted by a plasma Z-pinch to microscopy and microlithog. was built. As a pulsed emitter of soft x-rays the Z-pinch is an inexpensive source for high **resolution** flash microscopy of thin films, and live and unstained biol. specimens. In the repetitive mode, radiation from the device was used to expose resists for microlithog. Windows of different plastics shielded the resists from debris and allowed exposure of resists in air. The use of different pinching gases allowed tunability of radiation.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 71, 73
ST pinch Z x ray source; microscopy **lithog** plasma x ray
IT X-ray
(source, small scale Z-pinch device for)
IT **Lithography**
Resists
(x-ray source for, Z-pinch device for)
IT Pinch effect
(Z-, x-ray source for microlithog. and microscopy)
IT 9011-14-7 **25086-15-1** 25656-90-0
RL: USES (Uses)
(**lithog.** with, plasma Z-pinch device as x-ray source for **resist** layer of)
IT **25086-15-1**
RL: USES (Uses)
(**lithog.** with, plasma Z-pinch device as x-ray source for **resist** layer of)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

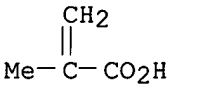
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 43 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1985:103619 HCAPLUS
DN 102:103619
TI Bilevel resist
IN Reichmanis, Elsa; Smolinsky, Gerald
PA AT and T Bell Laboratories, USA
SO U.S., 8 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 4481049	A	19841106	US 1984-585850	19840302
JP 60229026	A2	19851114	JP 1985-40345	19850302
JP 07099435	B4	19951025		
PRAI US 1984-585850	A	19840302		

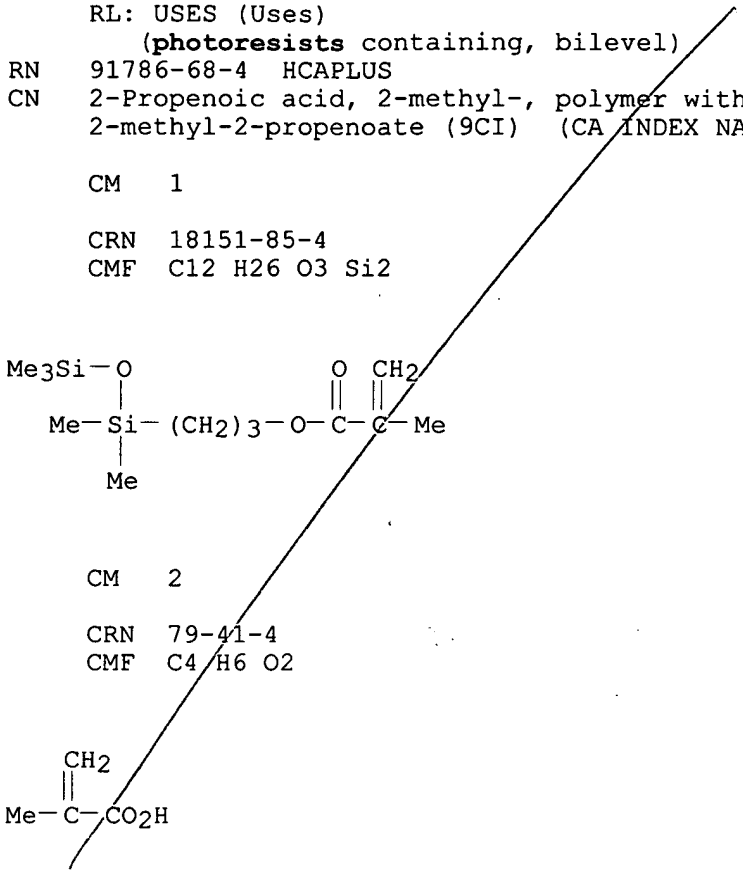
AB A bilveel resist having the attributes of a trilevel resist and requiring significantly less processing contains an underlying layer formed with a conventional material such as a novolac resin baked at 200° for 30 min and an overlying layer including a Si-containing material such as a Si derivative of poly(Me methacrylate). By using this resist, excellent **resolution** in the **lithog.** fabrication of electronic devices can be achieved.

IC B44C001-22; C03C015-00; C03C025-06
NCL 156643000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
Section cross-reference(s): 76
ST methyl methacrylate polymer silicon deriv; bilevel photoresist
IT Resists
(photo-, bilevel, containing silicon derivative of poly(Me methacrylate))
IT 71685-29-5 91786-67-3 **91786-68-4** 91786-69-5 91786-70-8
94977-23-8
RL: USES (Uses)
(**photoresists** containing, bilevel)
IT 2530-85-0 15289-97-1 16085-37-3 17096-07-0 18151-85-4 18269-97-1
19309-90-1 54586-78-6 95049-21-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(polymerization of)

IT **91786-68-4**
RL: USES (Uses)
(**photoresists** containing, bilevel)
RN 91786-68-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 3-(pentamethyldisiloxanyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 18151-85-4
CMF C12 H26 O3 Si2



CM 2

CRN 79-41-4
CMF C4 H6 O2

L59 ANSWER 44 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1985:87666 HCAPLUS
DN 102:87666
TI Sensitive positive electron beam resists
IN Douglas, Richard B.; Fure, Barbara J.; Lai, Juey H.
PA Honeywell Inc., USA
SO U.S., 7 pp. Cont.-in-part of U.S. Ser. No. 376,343, abandoned.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

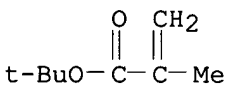
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 4476217	A	19841009	US 1984-578987	19840213
PRAI US 1982-376343	A2	19820510		

AB A pos. electron-beam resist containing methacrylic acid-tert-Bu methacrylate copolymer exhibits high sensitivity and excellent submicron **resoln**. Thus, a SiO2 support was coated with a solution containing methacrylic acid-tert-Bu methacrylate (68.9/31.1 mol.% ratio) copolymer (.hivin.Mw 579,000, .hivin.Mn = 405,000) in Me cellosolve, prebaked at 200° for 30 min, imagewise exposed to electron-beam radiation, developed with a Me cellosolve-Me iso-Bu ketone (1:1) mixture for 40 s, and rised with iso-PrOH for 20 s. The resist sensitivity was 15 + 10-6 C-cm-2. The images had min. swelling and the submicron lines possessed vertical walls.
IC B05D003-02; G03C005-16; G03C005-24

NCL 430326000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST pos electron beam resist **lithog**; methacrylic acid butyl methacrylate copolymer
IT Resists
(electron-beam, pos.-working, Bu methacrylate-methacrylic acid copolymer, with high sensitivity and submicron **resolution**)
IT **35343-63-6P**
RL: PREP (Preparation)
(**lithog**. pos. electron-beam **resist**, preparation and characterization of)
IT **35343-63-6P**
RL: PREP (Preparation)
(**lithog**. pos. electron-beam **resist**, preparation and characterization of)
RN 35343-63-6 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

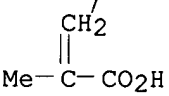
CM 1

CRN 585-07-9
CMF C8 H14 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 45 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1984:601296 HCAPLUS
DN 101:201296
TI Synchrotron radiation x-ray **lithography**
AU Haelbich, R. P.; Silverman, J. P.; Warlaumont, J. M.
CS Thomas J. Watson Res. Cent., IBM, Yorktown Heights, NY, 10598, USA
SO Nuclear Instruments & Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment (1984), 222(1-2), 291-301
CODEN: NIMAER; ISSN: 0168-9002
DT Journal
LA English
AB The construction of an x-ray **lithog**. beam line at a storage ring includes a scanning, collimating mirror and a vacuum system with a Be window for vacuum separation Wafers were exposed in a simple exposure chamber

to evaluate the illumination system and to test resist **resolution** and processing parameters. The results obtained for intensity, exposure time and **resolution** are discussed.

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)

ST synchrotron radiation x ray **lithog**

IT Resists
Resists
(in synchrotron radiation x-ray **lithog.**)

IT Synchrotron radiation
Synchrotron radiation
(x-ray **lithog.** using)

IT **Lithography**
(x-ray, synchrotron radiation, characteristics of)

IT 9011-14-7 **25086-15-1** 92940-45-9
RL: USES (Uses)
(**resist**, in synchrotron radiation x-ray **lithog.**)

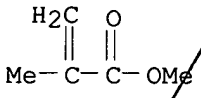
IT **25086-15-1**
RL: USES (Uses)
(**resist**, in synchrotron radiation x-ray **lithog.**)

RN 25086-15-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

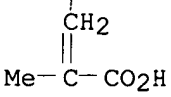
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 46 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1984:520357 HCAPLUS

DN 101:120357

TI Deep UV positive resists for two-level photoresist processes

AU Reichmanis, E.; Smolinsky, G.

CS AT and T Bell Lab., Murray Hill, NJ, 07974, USA

SO Proceedings of SPIE-The International Society for Optical Engineering (1984), 469(Adv. Resist Technol.), 38-44
CODEN: PSISDG; ISSN: 0277-786X

DT Journal

LA English

AB Methacrylate polymers containing 0-17.5 weight% Si were prepared by polymerization of 3-methacryloxypropylpentamethyldisiloxane (DS), 3-methacryloxopropylbis(trimethylsiloxy)methylsilane (TS), or 3-methacryloxypropyltris(trimethylsiloxy)silane (QS) with Me methacrylate and methacrylic acid. **Lithog.** characteristics and etching rates (O reactive ion etching) were determined for these polymers. A relatively low (6-10%) mol. fraction of siloxane ester was sufficient to effect a high degree of etching resistance. A 2-level resist structure using poly(DS-acrylic acid-Me methacrylate) containing 5.9% Si as a top photoreactive layer and HPR 204 as a planarizing layer, provided images with submicron **resolution**

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)

ST photoresist methacrylate silicone polymer; oxygen etching mask photoresist system; silane methacrylate polymer photoresist **lithog**

IT Resists
(photo-, pos.-working, deep-UV, for two-level processes, methacrylate polymers containing silicon as)

IT 73928-57-1
RL: USES (Uses)
(**lithog.** two-level photoresist process with structure containing methacrylate polymers containing silicon and)

IT 91786-67-3 **91786-68-4** 91786-69-5 91786-70-8
RL: USES (Uses)
(**photoresist**, for two-level **resist** processes, **lithog.** characteristics and oxygen reactive ion-etching **resistance** of)

IT 7782-44-7, uses and miscellaneous
RL: USES (Uses)
(reactive ion etching by, methacrylate polymers containing silicon resistant to, for two-level photoresist processes)

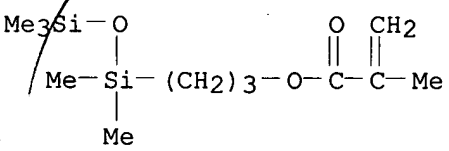
IT **91786-68-4**
RL: USES (Uses)
(**photoresist**, for two-level **resist** processes, **lithog.** characteristics and oxygen reactive ion-etching **resistance** of)

RN 91786-68-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with 3-(pentamethyldisiloxanyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 18151-85-4
CMF C12 H26 O3 Si2



CM 2

CRN 79-41-4
CMF C4 H6 O2

L59 ANSWER 47 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1984:501242 HCAPLUS
DN 101:101242
TI Positive resist image
IN Pfeiffer, Karl; Schulze, Ulrich; Rapsch, Brigitte
PA VEB ZFT Mikroelektronik Dresden, Ger. Dem. Rep.
SO Ger. (East), 10 pp.
CODEN: GEXXA8
DT Patent
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DD 209091	A3	19840418	DD 1981-235045	19811123
PRAI DD 1981-235045		19811123		

AB Pos.-working resist materials for electron-beam and x-ray **lithog** . having improved **resolution** and high sensitivity while at the same time having improved film formation, improved adhesion to various substrates, and improved etch resistance are composed of a solution of methacrylic acid-Me methacrylate copolymer in a monoalkyl glycol. The resist compns. are coated on substrates, exposed to ionizing radiation, developed with an alc. developer or developer mixture, and hardened. Thus, methacrylic acid-Me methacrylate copolymer, which had been purified by repeated solution in EtOH and precipitation with hexane, was dissolved in Me glycol, the remaining volatile liqs. removed in a rotary evaporator, the solution filtered through a 0.2 μm filter, and then coated on a support and dried at 200°. The resultant film was then electron-beam irradiated, developed with EtOH for 30 s, rinsed in MeCOEt or iso-BuCOMe, and hardened at 130° to 160° to show a sensitivity of 1.5 + 10-15 C-cm-2 and a contrast of 3.

IC G03C001-68; H01L021-312
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST x ray resist pos working; electron resist pos working; methyl methacrylate copolymer pos resist; methacrylic acid copolymer pos resist; alkyl glycol pos resist
IT Glycols, uses and miscellaneous
RL: USES (Uses)
(alkyl, electron-beam and x-ray resists containing methacrylic acid-Me methacrylate copolymer and)
IT Resists
(electron-beam, pos.-working, containing alkyl glycol and methacrylic acid-Me methacrylate copolymer)
IT Resists
(x-ray, pos.-working, containing alkyl glycol and methacrylic acid-Me methacrylate copolymer)
IT **25086-15-1**
RL: USES (Uses)
(electron-beam and x-ray **resist** compns. containing)
IT 109-86-4

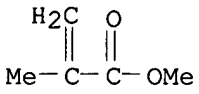
RL: USES (Uses)
(electron-beam and x-ray resist compns. containing methacrylic acid-Me methacrylate copolymer and)

IT **25086-15-1**
RL: USES (Uses)
(electron-beam and x-ray **resist** compns. containing)

RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

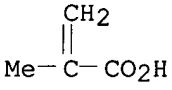
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 48 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1984:77254 HCAPLUS
DN 100:77254
TI Contact **lithography** at 157 nm with a fluorine excimer laser
AU Craighead, H. G.; White, J. C.; Howard, R. E.; Jackel, L. D.; Behringer, R. E.; Sweeney, J. E.; Epworth, R. W.
CS Bell Lab., Holmdel, NJ, 07733, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1983), 1(4), 1186-9
CODEN: JVTBD9; ISSN: 0734-211X
DT Journal
LA English
AB The 1st use is reported of a F2 excimer laser and a novel mask technol. for high **resolution** photolithog. at 157 nm. With a contact **lithog.** technique resist lines as narrow as 0.15 μm were made. Because of the short wavelength involved, conventional mask technol. using quartz substrates could not be employed. Alkaline earth halide substrates (e.g., CaF2) that have high transmittance at 157 nm were used as a base for the mask production **Resolution** test masks were prepared by using electron-beam **lithog.** and reactive ion etching to pattern a polyimide film on the substrates. The development of **lithog.** techniques at this wavelength is significant since the 157 nm radiation is currently the deepest vacuum UV radiation available with high energy flux from a readily obtained com. laser.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other

Reprographic Processes)
Section cross-reference(s): 76

ST fluorine excimer laser contact **lithog**; photolithog fluorine excimer laser; mask technol contact photolithog; polyimide mask contact photolithog; calcium fluoride mask contact photolithog

IT Photomasks
(fabrication of, for contact **lithog**. with fluorine excimer laser)

IT Semiconductor devices
(fabrication of, mask technol. for contact **lithog**. with fluorine excimer laser in relation to)

IT Polyimides, uses and miscellaneous
RL: USES (Uses)
(resist mask of, on calcium fluoride substrate, for contact **lithog**. using fluorine excimer laser)

IT Resists
(electron-beam, in mask production for excimer laser contact **lithog**.)

IT Lasers
(excimer, fluorine, for contact **lithog**.)

IT **Lithography**
(photo-, with fluorine excimer laser, mask technol. for)

IT 7782-41-4, uses and miscellaneous
RL: USES (Uses)
(excimer laser, for contact **lithog**.)

IT 9011-14-7
RL: USES (Uses)
(in mask fabrication for vacuum UV photolithog. using fluorine excimer laser)

IT **25322-25-2**
RL: USES (Uses)
(**photoresist**, for vacuum UV contact **lithog**. using fluorine excimer laser)

IT 7789-75-5, uses and miscellaneous
RL: USES (Uses)
(substrate, for contact **lithog**. mask for fluorine excimer laser source)

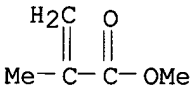
IT **25322-25-2**
RL: USES (Uses)
(**photoresist**, for vacuum UV contact **lithog**. using fluorine excimer laser)

RN 25322-25-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 2-propenoic acid (9CI) (CA INDEX NAME)

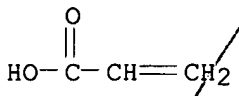
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-10-7
CMF C3 H4 O2

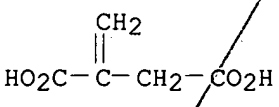


L59 ANSWER 49 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1984:59538 HCAPLUS
DN 100:59538
TI Copolymers of itaconic acid and methyl methacrylate as positive electron beam resists
AU Namaste, Y. M. N.; Obendorf, S. K.; Anderson, C. C.; Krasicky, P. D.; Rodriguez, F.; Tiberio, R.
CS Dep. Design Environ. Anal., Cornell Univ., Ithaca, NY, 14853, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1983), 1(4), 1160-5
CODEN: JVTBD9; ISSN: 0734-211X
DT Journal
LA English
AB The copolymers of itaconic acid with Me methacrylate P(MMA-ItA), are expected to perform as highly sensitive electron-beam resists based on their high electron-beam chain scission efficiencies (Gs). The Gs for P(MMA-20% ItA) was 2.5 times that of PMMA, and the Gs for P(MMA-35% ItA) was nearly 5 times that of PMMA. The copolymers have exhibited improved thermal stability over PMMA, as indicated by a decomposition temperature for P(MMA-20% ItA) that is 30° higher than that of PMMA. IR analyses of the copolymers showed that anhydride formed during the prebake step of the **lithog**. evaluation. The anhydride was predominantly a 5-membered intramol. anhydride ring which formed within single monomeric itaconic acid units. Some intermol. anhydride was suspected because of the reduced solubility of the baked copolymers. The copolymer resists were synthesized to contain 20 and 35 mol% itaconic acid. Copolymers of each composition were evaluated with varying prebake conditions to provide varying amts. of anhydride formation. These resists were then evaluated on the basis of sensitivity, contrast, and **resolution** Appropriate solvent systems for developing the **lithog**. patterns were chosen using a 3-dimensional solubility mapping technique based on polar, nonpolar, and H bonding solubility parameters. P(MMA-20% ItA), with a 160° prebake, exposed at 7.5 + 10-6 C/cm2 with an accelerating voltage of 20 kV, was developed using a mixture of EtOAc and iso-BuCOMe without thinning of the unexposed resist. P(MMA-35% ItA) baked at 120° produced 1 μm wide images at 5 to 8 μC/cm2 with a contrast (γ) of 2.5 to 3.5; 10% thinning was observed when developing areas exposed at 8 μC/cm2. Vertical walls were obtained at about 10 μC/cm2, and undercutting was observed with higher doses.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)
ST itaconic acid methyl methacrylate polymer; electron beam resist polymer
IT Infrared spectra
(of itaconic acid-Me methacrylate polymer)
IT Resists
(electron-beam, itaconic acid-Me methacrylate polymers as)
IT 108-10-1 110-49-6 141-78-6, uses and miscellaneous
RL: USES (Uses)
(developer containing, for itaconic acid-methylmethacrylate polymer

electron resists)
IT **27155-24-4**
RL: USES (Uses)
(pos. electron- beam **resist**)
IT **27155-24-4**
RL: USES (Uses)
(pos. electron- beam **resist**)
RN 27155-24-4 HCAPLUS
CN Butanedioic acid, methylene-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

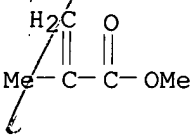
CM 1

CRN 97-65-4
CMF C5 H6 O4



CM 2

CRN 80-62-6
CMF C5 H8 O2

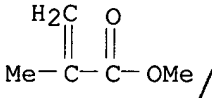


L59 ANSWER 50 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1983:135144 HCAPLUS
DN 98:135144
TI X-ray sensitive resists for submicron **lithography**
AU Aleksandrov, Yu. M.; Valiev, K. A.; Velikov, L. V.; Glebova, O. S.; Gribov, B. S.; Dushenkov, S. D.; Mozzhukhin, D. D.; Pleshivtsev, A. S.; Selivanov, G. K.; Yakimenko, M. N.
CS Fiz. Inst., Moscow, USSR
SO Mikroelektronika (1983), 12(1), 3-10
CODEN: MKETA9; ISSN: 0544-1269
DT Journal
LA Russian
AB Technol. and **lithog.** properties of the several pos. and neg. x-ray resists were investigated using synchrotron radiation in 0.7-2.3 nm region. Pos. resists were characterized by higher reduction and lower sensitivity than the neg. resists. The resists recommended for submicron x-ray **lithog.** were Me methacrylate-methacrylic acid copolymer (**resolution** 0.05 μm) pos. resist and allyl monomaleate-vinyl ether copolymer (**resolution** 0.5 μm) neg. resist. Introduction of Cu into a polymer structure effectively increased resist sensitivity. For example 8 fold sensitivity increase was observed with a 5.2 weight% increase of Cu content in Me methacrylate-methacrylic acid copolymer.
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)

ST x ray **lithog** resist **resoln** sensitivity; copper x ray resist polymer
IT Resists
(x-ray, for submicron **lithog.**, **resolution** and sensitivity of)
IT 9011-14-7 **25086-15-1** 25951-87-5 26141-88-8 26591-04-8 85192-78-5 85192-79-6
RL: USES (Uses)
(x-ray **resists** for submicron **lithog.**, characteristics of)
IT 7440-50-8, uses and miscellaneous
RL: USES (Uses)
(x-ray sensitive polymeric resists for submicron **lithog.** containing, concentration effect on sensitivity increase of)
IT **25086-15-1**
RL: USES (Uses)
(x-ray **resists** for submicron **lithog.**, characteristics of)
RN 25086-15-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

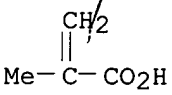
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



L59 ANSWER 51 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1983:9945 HCAPLUS
DN 98:9945
TI **Lithographic** evaluation of an o-nitrobenzyl ester-based deep UV resist system
AU Wilkins, C. W., Jr.; Reichmanis, E.; Chandross, E. A.
CS Bell Lab., Murray Hill, NJ, 07974, USA
SO Journal of the Electrochemical Society (1982), 129(11), 2552-5
CODEN: JESOAN; ISSN: 0013-4651
DT Journal
LA English
AB Preliminary expts. with a new deep UV (230-300 nm) pos. resist based on the resin-solution inhibition mechanism were previously reported. The resin

was an optically transparent copolymer of Me methacrylate and methacrylic acid soluble in alkaline developers but protected from dissoln. by a photosensitive solution inhibitor. The latter was one of a family of o-nitrobenzyl esters of large-mol. organic acids such as cholic acid. This resist system was capable of 0.5 μm **resolution** and had unusually high contrast (γ > 5). A detailed **lithog.** evaluation of this 2-component system is described. Parameters such as copolymer mol. weight, o-nitrobenzyl ester concentration, and developer composition are examined and related to sensitivity and contrast. Reactive ion etching rates are comparable to those of HPR-204 resist.

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other **Reprographic** Processes)

ST nitrobenzyl cholate methyl methacrylate polymer; photoresist resin soln inhibition mechanism

IT Resists
(photo-, pos.-working, resin-solution inhibition mechanism-based, Me methacrylate-methacrylic acid copolymer-nitrobenzyl cholate system as, sensitivity and contrast of)

IT 111-42-2, uses and miscellaneous 497-19-8, uses and miscellaneous 584-08-7
RL: USES (Uses)
(photoresist system based on resin-solution inhibition mechanism developed with, sensitivity and contrast in, concentration effect on)

IT **25086-15-1**
RL: USES (Uses)
(**photoresist** system containing nitrobenzyl cholate and, sensitivity of)

IT 80500-54-5
RL: USES (Uses)
(photoresist system containing poly(Me methacrylate-methacrylic acid) and, sensitivity of)

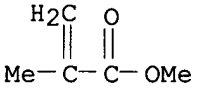
IT **25086-15-1**
RL: USES (Uses)
(**photoresist** system containing nitrobenzyl cholate and, sensitivity of)

RN 25086-15-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

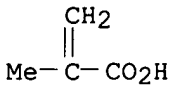
CM 1

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 79-41-4
CMF C4 H6 O2



=>